The Builder.

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Birmingham University; Elevation towards University-road.....{Sir Aston Webb, R.A., and Mr. E. Ingress Bell, F.R.I.B.A, Joint Architects.

The Borthwick Memorial *Morning Post* Embankment Home.....Mr. G. A. Lansdown, Architect.

The Greek Theatre, University College.....Professor Simpson, F.R.I.B.A., Architect.

The Schiller Theatre, Charlottenburg: from the *Berliner Architektur-welt*.....MM. Heilmann and Littmann, Architects.

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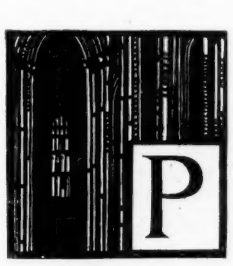
The Quest of Architectural Origins.



PROBABLY few histories are stranger than that of the word "history" itself. And in its strangeness it illustrates a human tendency. That "history" when we speak of natural history means something other than that chronological record of kings and kingdoms to which we most commonly apply the word is, of course, obvious; but even in this connexion we do not use the word as the ancients did. When Greek philosophers spoke of history they meant, of course, not a classified and analytical account of some department of nature, but rather a collection of facts made as a preliminary basis for such an account. Aristotle and his countrymen contrasted a "history" with a "science," meaning by the contrast that the process called history was the gathering together of the items of observation out of which in course of time such a classification might be made as would be worthy of the name of science. It is characteristic of modern ways of thought that we possess no equivalent for the word history in this its ancient and strict sense.

And the reason for this lack is partly, but not wholly, that few men are humble enough to engage themselves for a lifetime in the sole task of collecting evidences. Another reason lies deep in human nature. Search is seldom conducted without some stimulus, and the stimulus in nearly all cases is a theory as to the nature of the truth which the results of the search are expected to justify. Indeed it may be supposed that the very humblest of searchers would never set out on his quest without so much of a proposition in his head as would at least put method into his gleanings. But the difference between the man who would be willing to call the search a *historical* search, in the ancient sense, and the man who would at once treat his diary of facts as a page of science, is this—that the former, though inspired by hypothesis, will be content to see his hypothesis disproved, be it at the first stage or at the last, and will realise that, useful as his theories may be as guides to search, and as perhaps destined in the end to be crowned kings of the quest, yet the crowning must be at the unanimous vote of those facts that the fact-gatherer sought and found; not by some bare majority, or, worse still, by some shuffling of the ballot.

In the study of architecture, as in the study of nature, there are the same pitfalls for the searcher, the same temptations, and the same opportunities for the misuse of method. It naturally happens that the writer on architecture, in order to make the collection of his material interesting to himself, and the exposition of it intelligible to his readers, classifies his phenomena and connects them by chains of chronological, national, or other links. This is not wholly blameworthy. A book without system is obscure, unattractive, and for the most part uninstructive. We know, as a fact in the history of language, that the mere act of naming is an act of classification, and it is, therefore, impossible for any man of intelligence to put forth a description of a set of artistic events without at least implying some observation of series, concatenation, and causation among them. Most writers on art, and among them the writers whose work we most enjoy, go, of course, a great deal further than this. They form their own conclusions, probably in a great many cases right conclusions, and offer their show of facts as the proof of the correctness of their views. But human knowledge is cumulative. Writer follows writer, and sometimes the later author is modest enough to adopt the results of his forerunner's labour. Conversely it sometimes happens that the successor is at pains to confute his predecessor; and it may thus occur that a whole range of authors, each eager for the proof of his own argument, or for the support of an older one, may in initiation, in continuance, or in antagonism, be content to base a supposed proof upon evidences whose field is not sufficiently wide to warrant the elevation of the writer's assumption into a truth.

It is for reasons such as these that the lovers of architecture are pledged to welcome any discoverer who comes before them with the plea that at all costs we must review and enlarge our evidences. Old buildings, to be sure, are a waning not a waxing company, but if the buildings themselves decrease and decay, the means of marshalling them in

evidence are vastly multiplied. Quick travel and photography make it possilbe for a man of energy to bring into the compass of a single portfolio a range of incontestible witnesses, such as in the days of slow transit and insincere delineation was unattainable.

It is now six years since Signor Rivoira published the first volume of his remarkable book on the "Origins of Lombard Architecture"*; his second is now before us, and proves to us yet again that he is one who will spare himself no pains in seeing, collecting, and exposing all the evidence that can possibly bear on his subject. It certainly cannot be contended that Rivoira is a man without a theory; indeed with him, as with others, it is a theory—or shall we say an assumption?—that spurs the energy of his indefatigable search for evidences; but his line of argument is that by going beyond his predecessors—by widening his field of investigation instead of resting on old conclusions, he has earned a right to insist on the validity of his own view; or, failing that, has at least so increased the outlook that the views of his seniors in architectural history are no longer valid.

It will be recalled that in the former volume Signor Rivoira made out a very good case for the Italian origin of Italian art. He tilted against the supporters of Byzantine influence, and went the length of claiming for Ravenna an indigenous rather than a borrowed art. Giving the name Lombard to the whole genus of round-arched post-classic architecture, and discarding the term Romanesque as being at once too narrow and too broad, he sought to make it clear that this entire school of work, and its derivative styles, owe their origin to Italian precedent, and in the first place, at least, to Italian artists and craftsmen. His concern in the present volume is with the architectural developments on the north side of the Alps, which owe their birth to the earlier Lombardic impetus.

Two of Rivoira's chapters—the third and the fourth—are devoted to these islands of ours. The earlier deals with religious architecture in Great Britain from the time of Constantine to the Norman conquest; the later with what he calls the Lombard-Norman period of British architecture. Glance through those pages and it will become apparent that the author's method is no commonplace one. Inserted among the excellent illustrations of English buildings there occur records of the cloisters of St. John Lateran, of the Church of San Cesario on the Palatine, of the Cathedral at Modena, and even of a bit of masonry at Athens. What are these things doing in connexion with Great Britain? And, again, what business have we here with the Church of the Quattro Coronati, or with those of Sta Agnese or San Lorenzo? Why is a page on Hexham illustrated with a photograph from San Clemente, and what has Deerhurst to do with that gaunt arch through which the tired traveller after his long cross-country drive crawls into the steep street of Volterra? The answer comes in two words—"Evidences" and "origins."

We will not take our readers step by step through arguments which they would prefer to read for themselves (and doubtless will read for themselves in increasing numbers when Signor Rivoira has transcribed his work into the good English which we have reason to believe comes as easily to him as good Italian). One example will suffice—an example which exhibits alike the strength and the weakness of the author's method—the strength lying in the energy which thinks no evidence of similarity too small to be overlooked—the weakness that this very energy may at times overrun the scent, so to speak, or see more than there is to be seen.

Taking as an instance of pre-conquest architecture the little ruined church of St. Pancras at Canterbury, the author sets himself to lay before us its origin and parentage.

This church was, as Rivoira points out, a small, single-naved structure, measuring 13 metres by 8 metres, terminating in a curvilinear apse, which was subsequently destroyed, probably in the XIVth century, to make the presbytery rectangular. A range of four columns separated the nave from the apse, or rather from the rectangular presbytery, which intervenes between apse and nave; the two inner columns carried an arch, of which there are remains among the ruins, the outer ones may have supported either arches or lintels. A base and a piece of shaft of one column remain. On the north and south sides, and also at the west end, are certain nearly square chambers, which were evidently not part of the original design, but were incorporated during the progress of the work. This is proved by the fact that while the lower part of the walls are merely "butted" against the nave walls, the upper portions are properly bonded into the main structure.

"The form of this church," says our author, "with its semicircular apse equal in diameter to the width of the nave, but springing from a point beyond the end of the nave, and securing by means of this prolongation the space for a presbytery; with its colonnade separating presbytery from nave, with its short portico on the façade, and its two flanking chambers (each a portico or a chapel), had a notable influence in England on the type subsequent churches up to the Norman conquest."

"On the origins of this type there reigns the greatest obscurity—an obscurity on which we shall hope to shed some ray of light."

"The conception of the colonnade dividing the sanctuary from the nave was borrowed from a church which the monk Augustine must have known well, for it stood within a few yards of his monastery at Rome," namely, the Church of Saint Cæsarius, mentioned in documents of the VIIth century, and identified by Lanciani and others with the apsed structure that forms a part of the baths of Heliogabalus. "This church," continues Lanciani, "has more than one link with the buildings of the Anglo-Saxon period; for, apart from the colonnade separating the presbytery, we have here to note the cruciform shape of that presbytery, a feature which it possesses in common with Repton, Deerhurst, and the Church of St. Mary, in the castle at Dover." Other points are also brought forward to prove the connexion which we need not repeat here; it may suffice to note that the author's consideration of the side porticoes of St. Pancras and an inquiry into their origin leads him into an interesting but rather inconsequent digression on the familiar form of Lombard portico with two columns based on lions.

As to Rivoira's main argument on this church, it should be observed that the difference between the two churches in the matter of the *placing* of the rudimentary transepts is really a very important one. On plan, it is true, one church vaguely resembles the other in being more or less cruciform, but in so far as the transeptal additions are functional (and obviously no feature could find its way into early church planning without a function) it is surely obvious that there is a fundamental distinction between the two plans in that St. Cæsarius has its transepts on the presbytery side of the colonnade whereas the transepts of St. Pancras are attached to the nave. The question of ecclesiastical planning has, of course, been by no means neglected even in this country; indeed, it has been taken up from a British point of view by more than one writer, and notably by Mr. Prior.* It is not here suggested that Signor Rivoira is ignorant of Mr. Prior's book; in fact, he is probably familiar with Mr. Prior's line of argument, and has rejected it as savouring too strongly of national bias. But Mr. Prior's case is at least a good one when he contends that the "long chamber preceding the apse" is, so far from being a Roman feature, a bit of Keltic tradition woven into the type of which Augustin was the acknowledged importer. Mr. Prior even suggests that Irish monks introduced this and other Keltic characteristics into Italy! No one disputes the Augustinian influence, nor the introduction by St. Augustine of a definite plan of church, but it is, we believe, on record that the missionary saint planned his churches "in imitation of the great basilica of the Blessed Peter."† Wing, in Buckinghamshire, and Brixworth, in Northamptonshire, are looked upon as typical examples of this plan, and both are (or were) *aisled* churches. Signor Rivoira gives interesting illustrations and descriptions of them both, and, like Mr. Prior, though on a rather different track of derivation, shows their connexion with the Italian origin.

It is, of course, open even to a lover of architecture to say that these questions of origin matter very little; that we are concerned with the buildings as we find them, not with their genesis or their connexion with predecessors; and that so long as we can fix a building's date and study its detail, it does not greatly matter whether the influence that conceived its design was flowing east or west or north or south.

Perhaps, indeed, there is no great value in a hot fight over nationality in architecture; in fact, the more we study the records of the art the more do we realise

* "Le origini della Architettura Lombarda e delle sue principali derivazioni nei paesi d'oltr'Alpe." Vol. II. by G. T. Rivoira. Rome: Ermanno Loescher & Co. 1907. Price 55 francs.

* Also of course by Mr. Francis Bond in his "Gothic Architecture in England."

† "It had apses both east and west and no great transept, but towers midway north and south." Prior: "Gothic Art in England," p. 49.

that its boundary lines are by no means identical with the frontiers of kingdoms; but to say of any archæological investigation that it is of no use, is a proof that the speaker is lacking in the proper spirit of adventure. To a searcher honour is always due. That he searches is in itself evidence of modesty, proving that he knows of at least one thing that he knows not; and if we follow him in his quest we may perchance share his reward—the reward of the true explorer, who finds more than he set out to seek. In any case we can recommend to all who are interested in the wider aspect of European development in architecture a study of the volumes to which Signor Rivoira has devoted a long and arduous period of self-sacrificing energy. His wealth of illustrations alone, apart from the very interesting argument, forms a most suggestive synopsis of the architectural period with which he has especially dealt in this volume.

NOTES.

An Unemployed Workmen Bill.

THE Bill introduced on Tuesday by Mr. Ramsay MacDonald to provide work through public authorities appears to be a purely Socialistic measure, which is hardly likely to attract much public notice. Where men want work they are to be set at the public expense at employment so as to give them a livelihood. There is nothing between such employment and employment at all times and of all persons by the State; in other words, the State is to provide everyone with a living. The object of the measure has only to be stated nakedly to be seen to be wholly unattainable.

An Over-sea Railway.

SOME eighty miles south-west from the coast of Florida is the small coral island of Key West (*Cayo hueso*, the key or island of bones), once the resort of pirates, but now the site of the chief city of Monroe County, and the most important naval station of the United States. Between the mainland and this isolated spot extends the remarkable chain of islands known as the Florida Keys, about to be linked up by an extension of the Florida East Coast Railroad. The new line will be literally an over-sea railway, for many of the islands are separated by channels several miles in width. Some thirty miles south of Miami, the present terminus, the line passes for twenty miles through the Mangrove Swamps, where there is not enough water to float dredges, and not enough material at hand for the construction of embankments. It next enters a wide expanse of salt-water marshes, across which trestle viaducts are being carried, as the soil is not capable of supporting a solid roadway. About thirty of the island are to be utilised for short sections of the railway, but after Key Largo has been passed none of them are of any great length, and fully seventy-five miles of the new railway will be carried across the sea. More than fifty miles of rock and earth embankment will be built in shallow water, and in places where the depth is more considerable and the channels are exposed to storms, owing to gaps in the outer coral reef, concrete viaducts will be built with arches of 50 ft. and 60 ft. span, supported on piers rising from the sea bed from 10 ft. to 30 ft. below the surface. Four such viaducts will be required, ranging from nearly a mile to more than two miles in length each. The longest of these viaducts is already in course of construction, some idea of its importance being given by the statement that it will comprise 217 arches rising to the elevation of 31 ft. above high-water level.

Blackfriars Bridge Widening.

ACTIVE operations have now been commenced at Blackfriars Bridge by sinking one of the caissons for the foundations of the pier and abutment extensions along the western side of the bridge. When the caissons have been sunk to their full depth, the working chamber will be filled up with concrete, and the air shaft will be similarly treated. After preparation of the foundations, the masonry piers will be built up inside a space formed by temporary caissons and timber cofferdams enclosing the ends of the existing piers, with which the new masonry is to be bonded. In the extension of each pier two steel trusses will be built for the purposes of tying together the new and old work, and of carrying the skewbacks for the new steel ribs. Three additional arch ribs spaced 10 ft. apart centre to centre will be added to the bridge, increasing the width to 105 ft. between the parapets. As in the case of Westminster Bridge the tramway lines are to be laid at one side of the roadway, leaving a clear course for up and down streams of ordinary traffic. We are glad to learn that the contractors have decided to use electricity for the provision of motive power for their machinery, thus obviating the nuisance inseparable from the employment of steam engines and boilers.

Continuing Offences *v.* Building By-laws.

IN the case of Airey *v.* Smith the effect of by-laws was considered in connexion with buildings and new streets. The question there raised was whether a builder who had not carried the front roof water from houses in a new street into the surface water sewer in accordance with the building by-laws in force was liable for continuing penalties. In addition to the by-law regulating the drainage there was a by-law imposing penalties for offences and continuing offences. In the information the appellant was only charged with carrying out the works otherwise than in accordance with the by-laws, and it was contended that he should have been separately charged with so maintaining them. As in this case the person who executed the work was also responsible for its continuance, the Divisional Court held that sect. 158 of the Public Health Act, 1875, applied, and that the builder was liable for continuing the offence. This case may be compared with the case of Welsh *v.* West Ham Corporation (1900), where a builder who had been convicted of erecting a house in contravention of by-laws was held not liable to be summoned subsequently for a continuing offence, he not being the owner of the premises or in possession of the same at the time the second information was laid; and with the case of Blackpool Corporation *v.* Johnson (1902), where it was decided that an innocent purchaser who had purchased a house which had been erected in contravention of a by-law was not liable to be summoned for continuing the offence.

By-laws and New Streets.

IN the case of Leyton Urban District Council *v.* Chew the question to be decided was whether a by-law relating to channelling a new street was invalid, in the first place because there was no right given under it to the party affected by it to appeal, and in the second place because it was uncertain in its terms. The by-law in question required persons laying out new streets to construct on each side a proper channel of not less than a certain width and depth with granite cubes laid on a bed of cement concrete at least 6 in. in thickness, "or otherwise in a suitable manner and with suitable materials." This by-law was made under sect. 157 of the Public Health Act, 1875. The justices held that it was invalid both for uncertainty introduced by the alternative words and because it enabled no appeal to be made such as is contemplated in the Public Health Act, 1875, or the Private Street Works Act, 1892. The Divisional Court held the by-law valid, drawing a distinction between liabilities imposed as a condition on persons laying out a new street, and those imposed by the above Acts on frontagers on existing streets.

Concrete-steel Poles for Electric Cables.

REFERRING to our recent Note on "Timber Poles for Overhead Electric Cables," we may point to the fact that concrete-steel is being applied on the Continent and in the United States to the construction of supports for electric tramway and power transmission cables and telegraph wires. One application of the kind is to be found in the electricity distribution system of Zurich, where the poles have been made hitherto by moulding concrete-steel around a timber core allowed to remain permanently in position. An improved method of construction introduced by the Siegwart Company provides for the production of hollow concrete-steel poles by the aid of a special machine, the poles being made to any required length and taper, and the reinforcement calculated suitably for the length and the load to be carried. Last autumn the Pennsylvania Railroad in the United States erected a mile of concrete-steel telegraph poles in Indiana, so as to test them in actual service. These standards were from 25 ft. to 34 ft. long, 8 in. square at the bottom, and tapered thence to 6 in. square at the top. The reinforcement consisted of twenty-four $\frac{1}{4}$-in. rods. Notwithstanding the fact that the poles were hurriedly made and erected, and have been subject to heavy windstorms, they are said to have remained in perfect alignment and to have developed no cracks or other signs of failure. Apart from its superior durability, concrete-steel is not more costly than timber for the construction of telegraph and similar poles, even in the United States. In this country it ought to be far less costly.

Electric Lighting at West Ham.

WE have received the *West Ham Electrical Bulletin*, published by the Corporation Electricity Department. They draw the attention of London manufacturers, printers, and others, to the fact that West Ham is "the greatest manufacturing centre in the South of England." They point out its exceptional railway facilities, and the "unique system of waterways," which enable manufacturers to reduce transport charges to a minimum. There is a plentiful supply of skilled and unskilled labour, West Ham being the greatest dormitory within easy distance of London proper. The greatest attraction, however, is the cheap supply of electricity. The charges are 3d. per unit for lighting, 2d. per unit for heating, and only 1d. per unit for power. In addition, very substantial discounts are given to large consumers. This cheap power supply ought doubtless to attract those manufacturers who require a large supply of power. It will be seen that the cost of power is practically as cheap as that which the greater part of London would have obtained if the London County Council Bill had been passed.

Air of the New York Subway.

IN a paper read before the Boston Society of Arts, Mr. George A. Soper records some previously unpublished facts concerning the quality of the atmosphere in the New York subway. The data in question were collected during an investigation made by the author at the request of the Board of Rapid Transit Commissioners. From the exhaustive data contained in this paper it appears that, except inside the passenger cars during winter time, the general air of the subway was always and everywhere up to the usually accepted standards of chemical and bacteriological purity. The most objectionable feature was its high temperature, due to the conversion of electric power into heat. But it seems, contrary to popular belief, that this characteristic was in no way due to stagnation or vitiation of the air, for the small excess of carbon dioxide over that in the air of the streets showed conclusively that the atmosphere was being changed with remarkable frequency, except in the cars. The air, however, contained an objectionable quantity of black dust, apparently consisting of metallic particles resulting from the operation of the trains. The sanitary aspect of this component is now being studied by Mr. Soper. As in the case of London low-level railways, the air of the New York subway is particularly malodorous, an attribute which the author considers is to a large extent preventible, but he does not indicate any complete remedy for it in his paper.

Drawings at the Alpine Club.

AT the Alpine Club there is a collection of drawings by Mr. Roger Fry, and of drawings and some oil paintings by the Hon. Neville Lytton. Mr. Fry's drawings are chiefly small landscape studies, or old buildings and landscape. They appear to be purposely executed in a rather antiquated style, with little use of strong colour; and if their manner recalls Girtin and such artists of the early school of English water-colour, it must be added that they have much of the sober charm of Girtin and of the earliest class of Turner's drawings. "Abbeville" (24) is very like an early Turner sketch; "Lavenham" (15) is very like a Girtin drawing. "The Chalk Pit" (22) is an admirable landscape study made out of simple materials, and there are many others that have the same kind of excellence. Mr. Lytton's drawings include some works of the same class, but the most important of them are figure studies and crayon portraits. So far, these monochrome studies are superior of their kind to the portraits in oil, which are by comparison rather hard and mechanical in style. A curious frieze in which horses are introduced in a decorative scheme is worth notice.

Memorial Windows in Venice.

WE are glad to learn that a stained glass window to the memory of Browning has just been inserted in the Anglican Church of St. George at Venice, by subscription among Englishmen, and that it is in contemplation to put up a memorial window to Ruskin in the same church, to which Venetian as well as English contributions will be invited. It may seem natural to many that Ruskin should have a memorial in the Venice he loved so much and wrote so much about, in spite of the fact that his remarks on Venetian architecture include a great deal of palpable nonsense. The *Times* correspondent, from whom we derive the information, says nothing about the design or the artistic merit of the Browning window, or who the artist was, these being matters of no interest in the eyes of an English journalist.

The Whistler Memorial Fund.

WE have no objection to a memorial to Whistler, if his admirers wish to raise one at Chelsea, though it may be said that there are un-memorialised artists who are more worth a memorial. But the report of the meeting of the Fund this week affords another example of the untempered and ill-balanced adulation which is offered by literary men to an artist whose eccentricities and weaknesses were at least as prominent as his artistic merits. The speech of Dr. Gosse, who glorifies Whistler as having "added a sense of beauty to the world" (as if we had no sense of beauty before him), and imagines his spirit as "deigning" to descend for a moment, "on blue and glassy summer nights," and hover around the proposed monument, is one of the most absurd and over-wrought pieces of sentimentality we have met with. Dr. Gosse's judgment in art may be measured by the fact that some years ago he pronounced a certain clever modeller of Biblical scenes to be the greatest sculptor of the day. It is a pity that literary men will not stick to their last, and realise that the possession of high literary faculty does not in itself constitute them sound critics on art.

West Walton Church.

SINCE the publication of the Note in our last issue, we find that a news-paragraph had appeared, under the head of "Miscellaneous" in our own columns, in December last, mentioning that a fund was being collected for the repair of West Walton church. It is impossible, of course, for us to ensure recollection of every small paragraph that has appeared in our columns; but as we are technically responsible for having given the information, we owe an apology to the Rector for having allowed a criticism, which assumed that nothing was being done, to pass uncorrected.

LETTER FROM PARIS.

THE twenty-fifth Congress of the Société des Architectes Français was opened, on June 17, at Bourges. The proceedings of the Congress included a number of excursions and visits to the architectural monuments of Bourges and its neighbourhood—the Abbey of Noirlac, the Château of Meillant, and the Château and Museum at Mehun-sur-Yèvres. On June 22 the annual meeting and the distribution of "recompenses" took place in the Hemicycle of the Ecole des Beaux-Arts. The Medal of Honour of the Société Centrale has been awarded to M. Gustave Raulin. Medals for works in architecture were awarded to M. Gabriel Morice and M. Nénot, and to M. Carlier, architect, of Montpellier. M. Chas Nizet obtained the Dejean prize and M. Chas. Naudin the Delarue prize. The medal for archæology was awarded to Dr. Carton, army surgeon at Khérédine (Tunisia). M. Tassin, author of a work on artistic property in architectural design, was awarded the medal for jurisprudence. We may note also that a silver medal was awarded to M. Bulard, pupil at the French school at Athens, and another to M. Lebret, for his scheme for the restoration of the Château of Meudon, exhibited at this year's Salon.

In view of the increasing number of art exhibitions abroad, in which the collaboration of French artists is often solicited, it has been thought necessary to establish a Committee specially charged to enter into communication with the committees of foreign exhibitions, with the view of organising the French sections in such exhibitions for the most adequate illustration of French art. This permanent Committee, formed of artists of both the Salons, is presided over by M. Bonnat, with MM. Mercié and Besnard as vice-presidents and MM. Dawant and Dubufe as secretaries.

The Conseil Supérieur des Beaux-Arts has awarded the Prix National to M. Marquet, sculptor. The three travelling studentships in painting have been awarded to MM. Jonas, André Humbert, and Carrera. Two travelling studentships have also been awarded to architects; one to M. Ebrard, author of design for a "Lycée" for girls at Nice, and the other to M. Emanuel Chaine, who was classed first in a competition for a "Maison du Peuple" at Belleville.

The jury in the "Concours de Façades" have awarded the medals for the competition of 1905 to the architects of six houses, viz.: M. Leclerc (house No. 48 Rue des Petits Champs), M. Garriguene (house No. 48B, Rue de Rivoli), MM. Charlet and Perrin (house No. 43 Rue des Couronnes), M. Pellechet (house No. 9 Rue Pillet Will), M. Lavirotte (house No. 34 Avenue Wagram), and M. Georges Tersling (house No. 49 Rue de la Faisanderie). It may be added that the proprietors of the houses thus premiated are exempt from street charges, and that bronze medals are awarded to the contractors, and to the carvers who have executed the decorative details.

As already mentioned, the Académie des Beaux-Arts has awarded the Joest Prize to M. Marius Vachon, for his historic study on the Chambiges, architects of various important buildings of the French Renaissance. In a very interesting preface to this book M. Daumet speaks highly of the value of the researches of M. Vachon, who has thrown a new light on a dynasty of French artists who had been almost forgotten. He has shown the Chambiges as being really architects, or "maitres des œuvres," and not, as was long supposed, a mere body of masons.* Martin Chambige, the first of the name, built the transepts and lateral façades of Beauvais, and the principal façade of Troyes; he is credited with the completion of those of Sens and Senlis. The Tower of St. Jacques la Boucherie is also attributed to

*Thus M. Daumet. In the English *Dictionary of Architecture* Martin Chambiches or Chambiges, is duly described as having "directed the works" in the erection of the transepts of Beauvais Cathedral.—ED.

him. His son Pierre rebuilt the Château of Chantilly, and was appointed architect for the reconstruction of the façade of the Paris Hôtel de Ville by Pierre de Cortone ("Boccador") when it had been partially demolished, and imparted into it some of his own design. He built also various portions of the Palace of Fontainebleau, and to him is also arributed the transformation of the Château of St. Germain-en-Laye, especially in regard to the principal façade. He was also "maitre des œuvres" at the Château of La Muette. M. Vachon's book, accompanied by some curious engravings, is a valuable historical study. Mention may also be made here of the third Chambige, distinguished from the last-named as "Pierre II.," who built the small gallery of the Louvre, and also, according to M. Vachon, the large gallery of the same palace.

In a few days, on the occasion of the Fête Nationale, Paris will count one monument more, that which a French and Italian Committee has raised to the memory of Garibaldi. This will be erected in the XVth arrondissement, at the angle of Avenue Louvendal and Rue Alexandre Cabanel.

A new Committee has been organised at the Hôtel de Ville to look after the protection of sites in the Department of the Seine which are of artistic, picturesque, or historic interest. The Committee, which is presided over by the Prefect of the Seine, has already taken under its official protection the oak in the Bois de Boulogne planted by Francis I.; another tree, in the garden of the presbytery at Clichy, planted by St. Vincent de Paul; and the groups of trees which decorate the open space adjoining the Pont Neuf. At the Hôtel de Ville also the decision has been taken to rebuild the Hôpital Beaujon on the site of the fortifications included between the Porte de Champerret and Porte de Villiers. The existing hospital, which is quite insufficient for its requirements, will be demolished to give place to blocks of flats.

The exhibition of the works of the students of the French School at Rome has been opened at the Ecole des Beaux-Arts. In architecture, M. Bonnet has sent a drawing after an ancient bas-relief of a "Sacrifice to Minerva," and studies of details from the temple of Vesta at Tivoli and from the columns found in Lake Nemi. M. Lefebvre exhibits details of the Forum of Nerva at Rome, a study of the capital of a pilaster at Pompeii, water-colour sketches of mosaics found at Ostia, and a complete study of a Lycian sarcophagus in the museum at Constantinople. The work sent in by M. Hébrard includes drawings of the mausoleum of Diocletian at Spalato, the tomb of bishop Federighi in the church of the Trinity at Florence, and studies of the Communal Palace and the Place del Campo at Siena. M. Prost has sent a plan of St. Sophia, Constantinople.

We have to record the death, at the age of 84, of M. Datessen, architect, a former Controller of Works to the Corporation of Paris, and Honorary "Verificateur" of Bâtiments Civils and Palais Nationaux.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

MEETING IN EDINBURGH.

A VERY successful meeting of the Royal Institute of British Architects and the allied societies was held last week in Edinburgh, when visits were made to important buildings in the city and when the Institute annual dinner was held. The main party reached Edinburgh on Thursday evening last week, and the rain that was falling and the generally unpleasant atmospheric conditions did not promise well for the success of the visit, though, as it happened, on the following day the weather greatly improved, and the day was spent under conditions that were quite favourable for walks and visits, though on Saturday there was a return of the rain, and the visits to Rosslyn and Heriot Schools were more or less spoilt. But the meeting must be considered a great success, and the visitors from the south were accorded a very hearty welcome by the Edinburgh architects, who did all that seemed possible during the short stay of the visitors to make the meeting a profitable and enjoyable one. The reception at the City Chambers on Thursday night was a brilliant affair, and the visits on the following days were well arranged and conducted by Messrs. Hippolyte J. Blanc, W. T. Oldrieve, T. Ross, and the Rev. J. Thomson.

The Reception.

At the reception on Thursday in the City Chambers the members, who numbered about 400 ladies and gentlemen, were received by Lord Provost Gibson and Mrs. Gibson, while a large representation of the magistrates and Town Council were in attendance. The company included Mr. T. E. Collcutt, President of the Royal Institute of British Architects; Mr. Leonard Stokes, Vice-President; Mr. J. B. Gibson, Vice-President; Mr. Alexander Graham, Honorary Secretary; Mr. W. J. Locke, Secretary; Mr. J. J. Burnet, member of the Council of the Royal Institute of British Architects; Mr. William Flockhart, Mr. George Sherrin, Sir Rowand Anderson and Lady Anderson, Sir A. Oliver Riddell and Lady Riddell, Mr. Hippolyte J. Blanc, R.S.A., President of the Edinburgh Architectural Association; Mr. W. T. Oldrieve, Vice-President; Mr. J. T. Baillie, Vice-President; Mr. Colin B. Cownie, Secretary; Mr. A. B. Plummer, President of the Northern Architectural Association; Mr. R. Macgregor Chalmers, Professor Gourlay (Glasgow), and Mr. H. O. Tarbolton.

At the close of the reception Lord Provost Gibson, on behalf of the Corporation, gave the members a hearty welcome to Edinburgh. The citizens, he was sure, were rejoiced to have in their midst such an important gathering. A subject with which they were concerned was one that particularly interested corporations, in respect that it dealt with the increased convenience, beauty, and adornment of cities. He hoped the visit of the Royal Institute of British Architects to Edinburgh would be pleasant and profitable.

Mr. Hippolyte J. Blanc moved a vote of thanks to his Lordship, and the vote was heartily accorded.

Music was provided under the conductorship of Mr. H. Dambmann, and the City Museum was thrown open for inspection.

The Castle.

On Friday at half-past nine o'clock the Castle was visited under the leadership of Mr. Hippolyte J. Blanc. The chapel, he said—the oldest existing building—bears unmistakable evidence of great age. Mutilated by many appropriations, it still retains its original and unique form of plan. The Constable Tower, better known as the Argyll Tower—from its having been occupied by the Marquis of Argyll in 1685, on the eve of his execution—is part of the works carried out by David II. in the XIVth century. The walls are in places 17 ft. and 9 ft. thick. In 1573 the English besieged the Castle, and destroyed (with the "David" Tower) the Constable Tower. The latter was repaired in a very temporary manner. In 1885 the late William Nelson undertook the expense of the restoration to its former character and style. The buildings in the Castle group are of various periods. The Half-Moon Battery was formed in 1578. The Quadrangle, forming the oldest group, has, on the north side, barrack accommodation, designed by Billings in 1889; on the east side, the Palace building and Crown-room (1621), erected by William Wallace, King's Master Mason; also the earlier Palace occupied by Queen Mary, where her son, James VI., was born in 1566. On the south side is the Great Hall (built in 1434, reconstructed 1508), where the Scottish Parliament frequently assembled. For two centuries the building was subdivided into several floors and used as the garrison hospital. Through the liberality of the late Mr. William Nelson it was restored in 1885, and is now appropriated as a museum of Scottish armour.

St. Giles' Cathedral.

The party thereafter walked to St. Giles' Cathedral, the leading features of which were explained by Mr. Thomas Ross, F.S.A. (Scot.). Points he referred to were that the name was given to the Cathedral because the building was on the highway; that none of the earliest work is now visible; that a north side chapel was built in 1409; that the choir was extended in 1460 when the Preston aisle was formed; and that the crown tower, one of three built in Scotland, dates from about A.D. 1510.

The Parliament House.

Under the leadership of Mr. W. T. Oldrieve, F.R.I.B.A., Principal Architect to H.M. Board of Works, the Parliament House was next inspected. The erection of the existing Parliament House, he said, was commenced in the year 1632 and completed in the year 1640. The site on which it stands was at one time the burying-place attached to St. Giles' Church, and sloped from the height or ridge on which the High-street was built down to the lower level of the Cowgate. The records bear that in 1561 Queen Mary directed the Town Council to provide a sufficient house and rooms for the Lords of Session, Justices, and Sheriffs administering justices to the lieges of the realm. The result was the erection of the New Tolbooth, but it apparently was far from sufficient in the accommodation which it provided, and portions of St. Giles' Church continued to be used for civil purposes practically till the opening of the new Parliament House in 1640. The total cost of the Parliament House completed in 1640 amounted to 10,640*l.* Of that sum 6,770*l.* was contributed by the town, and 3,784*l.* was the result of collections from the citizens. The hall was practically finished in 1639, and it was in that year that the Scottish Parliament first met there. It had been hoped that Charles I. would have opened the Parliament and inaugurated the new hall in person, and James Howell, writing from Edinburgh about that date, refers to "the fair Parliament House built here lately," and says that "they ill-advised King Charles otherwise than to open it in person." It is not known who was the architect of the Parliament House. The name of Inigo Jones is suggested, but there are no facts to support this theory. In 1633 James Murray, Master of Works to His Majesty, received a grant of 1,000*l.* "for drawing up the model for the works of the Parliament and Council House."

The best idea of the architectural features of the Parliament House as originally built can be gathered from Gordon of Rothiemay's engraving. The exterior was designed in Scottish Gothic architecture; the interior consisted of the main hall of the same dimensions as at present—123 ft. by 42 ft.—and an eastern wing nearly square, which contained court-rooms and retiring-rooms, and was built in two stories. A turret staircase, situated at the corner between the main building and the eastern block, gave access to the rooms on the upper story, and also led to the flat roof of the main hall. The windows of the hall, as shown in the engraving, were in two tiers, but this was altered when the new piazza and other buildings were added early in the XIXth century. The most conspicuous feature in the hall has always been the arched roof made of Scotch oak, with cross beams, struts, and straining-post, rising from carved stone grotesque corbels so as to form a five-segment span. The roof remains practically in its original condition.

The central fireplace, which is of old Italian workmanship, is a fine specimen of wood-carving; the central panel contains a representation of Christ delivering the keys to Peter. It was presented to the Faculty by the late Alexander Robertson, Advocate, and is dedicated to the memory of Lord Benholme and Lord President Hope, father and grandfather of Mr. Robertson. The two other mantelpieces were the gifts to the Faculty of a former Treasurer, Mr. Charles Robertson; that at the south fireplace is dedicated to the memory of his father, Mr. George Robertson of Benholme, Advocate, and that at the north to the memory of his father-in-law, Mr. J. Walker, of Dalry, Advocate and Principal Clerk of Session.

The great window was erected in 1868. It cost 2,000*l.*, was designed by Wilhelm von Kaulbach, and executed by the Chevalier Ainmuller, of Munich. It represents the historic event of the inauguration of the Court of Session in 1532 by King James V. The four windows in the west of the hall were erected about 1870. The first, that at the south end, was the gift of Mrs. Macqueen, of Braxfield, and of the son and widow of Justice-Clerk Hope. The left side is dedicated to Robert Macqueen, of Braxfield, Advocate, the husband of the donor, and to Lord Justice-Clerk Braxfield, his

grandfather. The right side of the window is dedicated to John Hope, Lord Justice-Clerk. The second window contains the crests of well-known Scottish Institutional writers. The third window was erected in memory of Francis Jeffrey and other Deans of Faculty, and contains their crests. The fourth window, at the north end of the west wall, contains the crests of Lord Advocates. The left side of the window was presented by Mrs. Eliza Rae, and is dedicated to her uncle, Sir William Rae, Bart. The right side of the window was presented by Mr. Andrew Rutherfurd and Mr. Andrew Rutherfurd Clark, afterwards Lord Rutherfurd Clark, and is dedicated to their uncle, Lord Advocate Rutherfurd.

There are at present fifty-two portraits hanging on the walls of the Great Hall. The collection contains no less than eight specimens of the work of Sir Henry Raeburn, R.A. (1756-1823).

Holyrood Chapel and Palace.

Luncheon was then partaken of at the Carlton Hotel under the presidency of Mr. Blanc. The loyal toasts were honoured, and the party then proceeded to Holyrood, the various buildings in the High-street and Canongate of historic and architectural interest being pointed out *en route*. At Holyrood Mr. Oldrieve again took up the leadership, and the Palace and Chapel were inspected, the Royal apartments being open for the occasion.

Mr. Oldrieve exhibited a plan of the buildings, showing :—

(1) Ruined fragment of Chapel Royal, the only remaining part of the ancient Abbey buildings, dating from the XIIth century.

(2) Great tower of the old Palace, dating from the beginning of the XVIth century, all that remains of the Palace built by James IV. and James V.

(3) Palace built by Charles II., 1671 to 1678.

He said that the Abbey of Holyrood was founded by David I. in 1128 for the canons regular of the Order of St. Augustine. The name Holyrood appears to have been founded upon the famous Black Rood of Scotland, which was a cross-shaped reliquary of pure gold with an image of the Saviour in ebony, enclosing what was then believed to be a fragment of the true cross. Queen Margaret, the mother of David I., brought this precious relic to Scotland, and in this way we have probably the origin of the name of the Holy Rood or Cross. It is considered that the first part of the church erected was the choir, which was probably rebuilt at a later date, and has entirely disappeared. Much of the nave, which is practically all that now remains, is of a character which is generally thought to date about the latter half of the XIIth century.

Very considerable additions and works for strengthening the church were executed by Abbot Archibald Crawford, who held office from 1457 to 1483. In 1322 the Abbey was plundered by the army of Edward II., and again in 1385 much damage was done by the army of Richard II. It was, however, in 1544 that the Earl of Hertford's army burned the Abbey and Abbey Church, while three years later after the battle of Pinkie very extensive damage was done. At this time the roof is believed to have been stripped of lead and the bells taken away.

The nave must have been kept in some state of repair even after this date, since Queen Mary was married to Darnley within its walls on July 29, 1565. The ornaments and furniture, however, were despoiled by the Earl of Glencairn and the Lords of the Congregation in 1567. Shortly after this date it is believed that the nave and aisle arches were built up, as we see them now, with fragments of the old masonry.

After about seventy years of utter neglect the old roof covering was in 1758 replaced by heavy stone slabs, which overweighted the vaulting, and in 1768 thrust out the north wall and reduced the ancient building to the ruinous condition in which we now behold it. There was no time to describe the beauty and the detail, but a walk round the interior and then the exterior would show that the work must originally have been designed and carried out with great artistic skill. Attention was particularly invited to the beauty and variety of the wall arcading and to the western doorway.

James IV. commenced the building of the Royal Palace of Holyrood House about 1498, and continued to expend money upon the work until his death at Flodden in 1513. James V. continued the work, and made certain additions in 1535 and 1536, and the Board of Works had recently restored to its original position a replica of the sculptured panel upon the western front, with the Scottish arms and the inscription "I.R.V." The original fragments of this sculptured panel are still standing in the south-western corner of the chapel.

An attempt had been made recently to revive (he liked the term better than the word "restore") the interior of the historical apartments so that a better idea could be obtained of the condition of these rooms before they were spoilt by comparatively modern treatment (or ill-treatment). He drew attention especially to the original wood-panelled ceiling in Queen Mary's audience-chamber, with other points of interest. The more recently-built Palace dates from the year 1671, and was built from the designs of Sir William Bruce by Robert Mylne, the King's Master Mason.

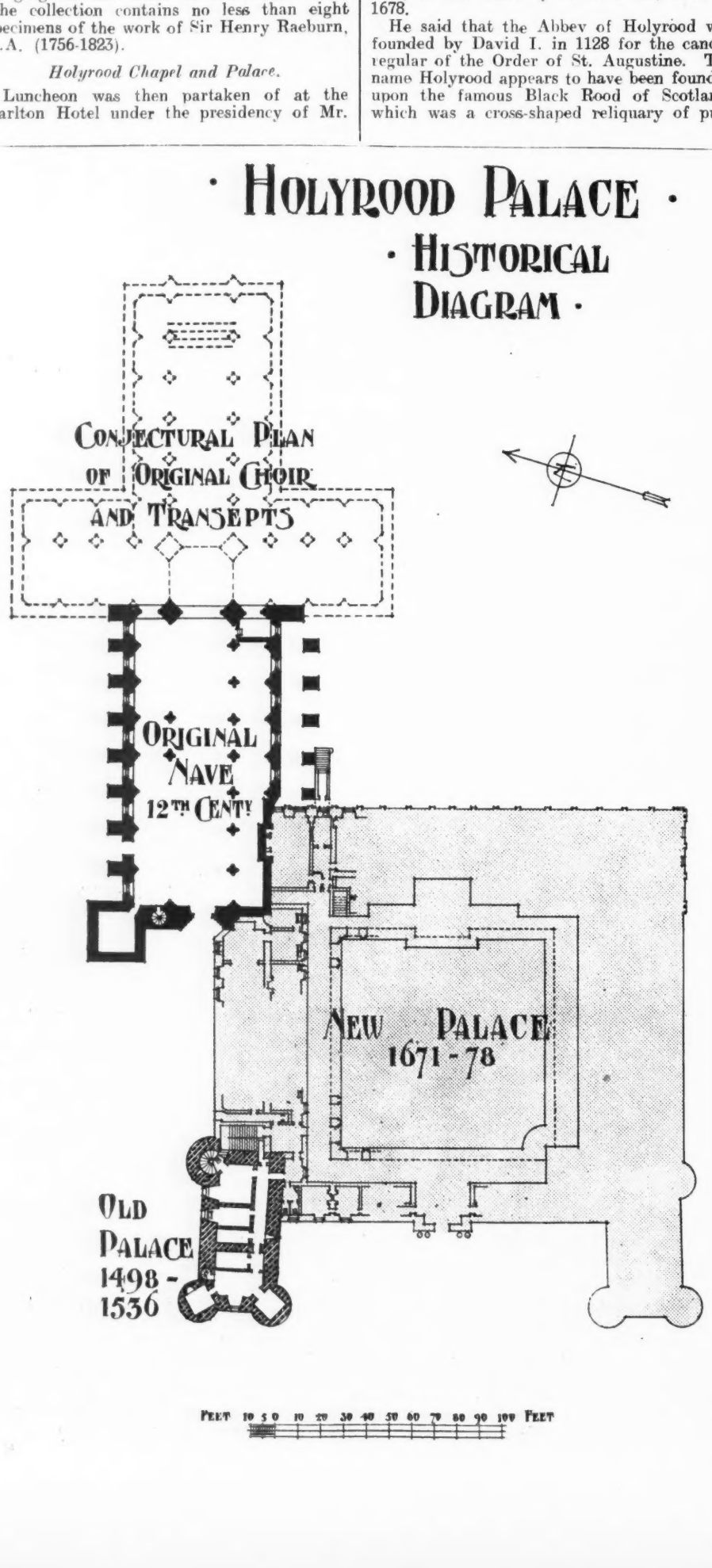
Mr. Parsons, the resident Inspector of the Lord Chamberlain's Department, conducted the party through the State apartments, which are fully decorated and furnished, and some fine oak doorways, etc., and many very fine pieces of tapestry were noticed. Some of the plastered ceilings also received much attention from the visitors.

In the grounds of Holyrood a photograph of the party was taken.

At a quarter past four o'clock the party resorted to the National Galleries, Mound, to inspect the Architectural Exhibition of the Edinburgh Architectural Association, at present being held in the R.S.A. Galleries. There tea was served.

The Institute Annual Dinner.

In the evening the annual dinner of the Institute was held in the Caledonian Station Hotel, the company numbering about 120, including Mr. Thomas E. Collcutt, the President, who occupied the chair; Lord Provost Gibson, the Right Hon. Lord Justice-Clerk, the Lord Dean of Guild,


HOLYROOD PALACE
HISTORICAL DIAGRAM
CONJECTURAL PLAN OF ORIGINAL CHOIR AND TRANSEPTS
ORIGINAL NAVE 12TH CENTY
NEW PALACE 1671-78
OLD PALACE 1498-1536
FEET 10 5 0 10 20 30 40 50 60 70 80 90 100 FEET

the Provost of Leith, the Hon. Lord Maclaren, Sir R. Rowand Anderson, Sir T. Gibson Carmichael, Bart., Sir James A. Russell, Mr. Hippolyte J. Blanc, R.S.A., President Edinburgh Architectural Association; Professor Cooper, Professor Gourlay, Colonel F. V. Holme, Rev. Dr. A. Wallace Williamson, and Messrs. J. T. Baillie, Vice-President Edinburgh Architectural Association; T. Barker, F. Blanc, J. Bruce, J. Burgess, C.I.E., J. J. Burnet, A.R.S.A., J. T. Cackett, J. D. Cairns, A. Lorne Campbell, J. A. Campbell, W. Y. Carrick, H. C. Charlewood, R. F. Chisholm, R. Clark, D.L., R. W. A. J. Cosway, C. B. Cownie, Hon. Secretary Edinburgh Architectural Association; A. H. Crawford, A. Cullen, J. Davidson, E. Guy Dawber, F. W. Deas, J. W. Douglas, J. B. Dunn, T. E. Eccles, C. S. Errington, T. Fairbairn, W. Flockhart, J. S. Gibson, Vice-President Royal Institute of British Architects; A. Graham, Hon. Secretary Royal Institute of British Architects; P. L. Henderson, J. M. Henry, V. D. Horburgh, J. K. Hunter, J. Keppie, A. H. Lamont, T. G. Leadbetter, J. Lochhead, W. J. Locke, Secretary Royal Institute of British Architects; R. S. Lorimer, A.R.S.A., R. J. Macbeth, A. L. MacGibbon, A. Mackenzie, T. F. Maclennan, A. Macpherson, D. MacRitchie, E. C. H. Maidman, L. Martin, J. H. Martindale, J. McIntyre, J. R. McMillan, A. J. Meacher, D. Menzies, G. A. T. Middleton, J. Murray, W. T. Oldrieve, Vice-President Edinburgh Architectural Association; G. D. Oliver, J. Oswald, A. N. Paterson, J. P. Paterson, T. T. Paterson, A. B. Plummer, President Northern Architectural Association; R. B. Pratt, A. N. Prentice, T. D. Rhind, D. Robertson, A.R.S.A., T. Ross, G. Shervin, A. Scott, A. R. Smith, A. Saxon Snell, J. Slater, L. Stokes, Vice-President Royal Institute of British Architects; G. Sutherland, H. O. Tarbolton, A. T. Taylor, H. Ramsay Taylor, P. J. Turner, W. G. Walker, E. A. Walton, R.S.A., J. Watson, G. Watt, W. Fleming Wilkie, J. A. Williamson, W. Williamson, and G. P. K. Young.

The Chairman proposed the loyal toasts, which were received with much enthusiasm.

Mr. Leonard Stokes then proposed the toast of "The City of Edinburgh." He said he did not suppose he could tell them anything about the City of Edinburgh, and therefore he had not taken the trouble to look up statistics as to the death rate and so on; but he was in the company of some very pleasant ladies that day, and he hinted to them that he was in trouble—that he had to make a speech that evening, and he asked them if they could suggest any beauties in Edinburgh that he could refer to. One of them looked a little shy, and said: "I do not think you need refer to any of us—at least by name." He, unfortunately, rather put his foot in it by explaining that that was not what he meant; he meant architectural beauties, and that made matters worse. He would try, however, as a mere southerner to apply his remarks to the architectural aspect of the case. They all knew more about Edinburgh and of the beauties of Princes-street than he could tell them, but it struck him from the architectural point of view that one reason why Princes-street was so fine was that there was architecture on one side only. ("Which side?") If he might say so, again as a mere southerner, he should like to remark how he regarded personally the exceedingly high standard—he hoped they would not think he was saying what he ought not to say—which their modern architects attained to. It made a southerner feel ashamed almost of what was done in the south; and the excellent work that was being done seemed to be the common thing in Edinburgh. Another point was that architects in the south had, when they wanted to put up a new building, to deal first of all with the London County Council and all its regulations; then the district surveyors and their requirements, and party-wall notices, etc.; then the claims of owners of adjoining premises as to ancient lights, and the requirements of borough councils and others. He understood that in Edinburgh matters were dealt with in a simpler way, for there was the Dean of Guild Court, and when their plans passed that Court—("When")—they could go on without further delay caused by the authorities. Architects in London were trying to establish a sort of Dean of Guild Court, which he hoped would get them out of the difficulty he had referred to. With the toast he coupled the name of the Right Hon. the Lord Provost, and in doing so he should like to express their thanks to him for the way in which he entertained the members the previous evening. It was not always that municipal authorities came forward to entertain architects, but on this occasion the Lord Provost and the councillors had given them a very fine welcome, and they had enjoyed themselves very much indeed. He might say that they liked Edinburgh very much, and were enjoying their visit greatly.

The Lord Provost, in reply, said he considered it a high privilege to be asked to respond to the toast. He said last night, and he could only repeat, how pleased the City of Edinburgh was to welcome strangers who came within their gates, and they were particularly glad that they had been able to show the city that day under greatly improved weather conditions than those that had prevailed during the last fortnight or three weeks. Mr. Stokes had referred to the conditions in Edinburgh as to the erection of buildings. They were fortunate in having very considerable powers, and a very experienced Lord Dean of Guild, and Court to advise with him in regard to matters submitted to them for their consideration. Mr. Stokes referred to the difficulties of architects in other parts of the country in reference to building conditions, but the authorities in Edinburgh were faced with as many troubles as other authorities, and the powers they possessed were, he was satisfied, insufficient. The Dean of Guild Court was considering more stringent rules in connexion with the erection of buildings than had yet been enforced, for that was necessary if they were to maintain their prestige for magnificent streets and fine architecture. They had a spirit displayed in modern times to turn the last penny to account by the erection of overwhelming buildings on both sides of even a narrow thoroughfare; the members of their conference, on the other hand, were men who desired to see buildings erected under the very best conditions. It was not by the display of shoddy or poor architecture that the community was to be benefited in the end, but by the self-sacrifice of owners that the community would attain to a better state. In the circumstance that the meeting of the Institute would be brought to an end the following day there was no opportunity for the city to do more to make the visit a satisfactory one, but he hoped the visit would be a profitable and enjoyable one.

The Right Hon. the Lord Justice-Clerk, in proposing the toast of the evening, *i.e.*, "The Royal Institute of British Architects and the Allied Societies," said he had lived in Edinburgh all his life, and had seen many things which had caused him joy in the works of the architects of Edinburgh and he had seen some things which caused him and his fellow-citizens very great grief. Those who had taken them about the city that day had no doubt taken them past the things they ought not to look at and concentrated their attention on those things which were worthy to be remembered, and there were things in Edinburgh which were worthy to be remembered. They would agree that to come to a city celebrated by the names of Adam, Playfair, and Hamilton was to come to the right place. What these men did was a strong and lasting protest against the state of things which existed for a considerable time before they began to exercise their art—he might say their genius—in improving the architecture of the city. There were no people in the world with whom he personally had more sympathy than those who belonged to the profession of the architect. All other workers in art did pretty much what they liked. They could be successful or unsuccessful, and the work they produced, even if of the best, would not be looked at every day. It might be put away in a house or a private gallery, but the work of the architect must be seen every day. The poor architect might stand in front of his own work and tell everyone who passed how he had been cut down as to the money he had to spend and how he had been squeezed by public bodies and others to add what they thought would be an improvement, but what he thought would be abominable, and if he did he thought he would get the sympathy of all right-thinking men. He was glad to say they had a great revival of public taste and a great cessation of the ordinary practice, which existed a good many years ago, of everybody, whether he had taste or not, expressing his opinion and urging his views about everything that was done in regard to the architecture of the city in which he lived. There was a great improvement, no doubt. He was not going to enlarge on that, but, being a practical man, he would like to say a word to the architects all over the country as to what they ought to do with their buildings. An architect erected a beautiful building, the admiration of all who saw it. Happy were they who saw it before it had been interfered with. If he returned three or four years afterwards, he might find it perhaps plastered over with notices and with abominable posts with square boards on the top stating that this was the work of So-and-so, and the price of admission into it was threepence. It was enough to make the architects of St. Giles' rise from their graves with shame that the ecclesiastical commissioners of the city kept the doors of that church shut against everyone who wished to go in to see the beautiful architecture, and, it might be, sometimes to sit down and reflect in the quiet of that noble building. But those men at the door, with a demand for threepence in order that nobody but the aristocracy should be able to get in! Was it decent and right that that beautiful building, dedicated to the worship of God, should be a building where people had to pay to enter? It was not good for architecture that there should be anything of the sort. He should like himself, in going into that church, rather than find it empty, except for a few empty-headed tourists talking irreverently, to see a lot of poorly-dressed old women going in there in the course of the forenoon—going in quietly and thinking a bit. It might do a great deal of good to a great many of them, and the church would look far better for it. He would suggest to the Lord Provost that he should consider whether it was right that the noble building dedicated to the worship of God should be a place where people had to pay before they could go in. Then at Westminster Abbey, what did they see? A notice, "In this way," "Out this way," and a photographer at the entrance-door selling photographs for gain. It reminded him of the old money-changers. Inside they saw a number of big placards in five or six languages describing the buildings, and tied round the pillars! And there were worse things than that in Westminster Abbey. He hoped they would all set their faces against the execrable practice of loading the walls of beautiful churches with monuments and tombstones, and splashes of soap-suds that were intended to represent clouds, with impossible angels and somebody lying in a dress made in the time of Queen Elizabeth. He thought an architect should make it a stipulation before he erected a building that nothing would be put in it and no niches would be cut in the walls without his approval and consent. Why did we surround our churches, about 2 ft. off from the edge of the building itself, with a railing which disfigured the building and had no other effect but to form a receptacle for old hats? And if there was anything to clear out, the scavenger had to climb the railings to remove it. At one time St. Giles' was enclosed with wrought-iron railings, which he did his utmost and ultimately succeeded in getting removed. He would never have been able to get the railing removed unless he had told the Commissioners it was splendid wrought-iron, and anyone would give them something to be permitted to take it away. A contractor gave them 25*l.* for it, and he was allowed to take it down. The abominable railings put round St. Paul's Cathedral were not put round it to any good purpose at all. He could mention a great many cases in Edinburgh in which the same sort of thing had happened. For the citizens of Edinburgh he might say they were delighted to see the members of the Institute, and they would like them to stay longer. With the toast he coupled the name of the Chairman, the President of the Institute, who he was sure was a representative man amongst them.

The Chairman, in response, said they felt

grateful to the Lord Justice-Clerk for the sympathetic manner in which he had referred to the many difficulties which beset the architect. Those difficulties were not only personal to the architect, but also personal and material to the buildings which he erected. Architects would feel a great deal of sympathy with what the Lord Justice-Clerk said as to paying to enter places of worship and as to his other remarks, but there was one matter to which he did not refer, and that was as to the wretched character of a good deal of stained-glass. If they could take a big sledge-hammer and destroy some of the stained-glass which had been put up in ecclesiastical buildings it would result in taking away a good deal of rubbish and would add to the beauty of the buildings. He desired to endorse what Mr. Stokes had said as to the reception accorded to them by the municipal authorities; they were delighted with the brilliant reception and with the opportunity of meeting the citizens of that beautiful city. He was afraid that they as southerners had not a very clear or concise knowledge of the varied and rich history of Edinburgh, and perhaps most of their knowledge really came from what they had read in Sir Walter Scott's works rather than from any other source. They knew more of Jennie Deans, George Heriot, Captain Porteous, and Bonny Prince Charlie—perhaps really not so bonny as his devoted followers imagined—than of other great people of Edinburgh. The thanks of the members of the Institute were due to Messrs. Blanc, Ross, and Oldrieve, and others for the great pains they were taking in showing them over the buildings they were visiting and in describing those buildings. He thought it came as a great surprise to many of them to find what beautiful work was to be found in Holyrood Palace. It was a revelation to them, and he did not think he had ever seen more beautiful ceilings than those they had seen there, and it would be of great interest to the profession if they could secure for their *Journal* illustrations of some of that beautiful work. There were many guests there who were not directly concerned in the art of architecture and who might not be familiar with the work undertaken by the Institute, or the reason for its existence. It might be of interest to them to learn that it was founded in the year 1837, and its purpose was specifically stated in the charter to be "the general advancement of civil architecture, and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith." Their greatest endeavours should be to maintain the high ideal that inspired the founders, and which they hoped had become a tradition worthy of their art. The work of the Institute and of the Architectural Education Board in the cause of education deserved their warmest support, and in no way could the advancement of architecture be more surely promoted than by the education of the architectural student on sound and comprehensive lines. The system of education now in force was shown to be successful by the large number of students who in recent years had qualfied for the class of Associate by passing a somewhat severe examination. Still more striking proof of the efficiency of the present system was furnished by the very excellent work now being done by the younger men. The Associates, by reason of their numbers, had naturally great influence in shaping the policy of the Institute, and he was sure that all classes had the utmost confidence that they would continue to use this influence in a prudent manner, and that their aim would be the highest one—the promotion of architecture. They would consider not what they could get out of the profession, but what they could put into it. It was sometimes said that the aspirations of youth were more liberal, more generous, and more lofty than the emotions that dominate those who had passed the meridian of life. If this was so, let them hope that the energies of the younger members would be devoted to their great art, and that personal feelings would be subordinate to higher considerations. Although the Institute was more and more recognised by the Government and by the London County Council as qualified to render valuable services in matters affecting the art of architecture, the laying-out and development of new thoroughfares, etc., it was still their earnest endeavour to widen its scope and to render its counsels yet more influential than heretofore. In this connexion the Council had recently addressed a letter to the President of the Local Government Board offering its services on the preparation of the Bill which was presently to be laid before Parliament, and which would deal with the development of towns and their suburbs. The Council had appointed a committee to inquire into the matter and to suggest the lines upon which the expansion of large towns could best be proceeded with. The Bill would no doubt give large powers to municipal bodies in dealing with the improvement and development of towns, and it should be the endeavour of the allied societies to bring their knowledge and experience to the service of municipal bodies. It was a matter of congratulation to all those who were interested in this very important matter that the President of the Local Government Board fully appreciated its gravity, and they might be sure that he would view the question of the betterment of towns and suburbs in a broad and statesmanlike way. They also hoped they might be of some assistance in the drawing up of particular schemes; their education as architects surely made them competent to approach such subjects with some confidence. The Bill, of course, would have far-reaching consequences; it would affect the municipal government of all our large towns, and they saw with pleasure that the President of one of the allied societies had already made some valuable suggestions in his address to his Society. He had spoken at length on this subject, his excuse being that a Bill such as the one contemplated would have important results in regard to the professional practice of many of their brethren. If a wise and comprehensive Bill was passed it should deal a severe blow to the speculative landlord and the speculative builder, and development of our suburbs would be under proper control and no longer left to the baneful greed of the ground-rent speculator, and it was probable that the public would quickly recognise the beneficial effects of a wise development, and would be desirous that new buildings should, at any rate, reach a higher standard than at present obtained. Given well-laid-out thoroughfares and ample open spaces, an improvement in architecture would probably follow. He thought such a Bill, in dealing a blow to the speculator, would also deal a blow to the pirate architect. Let them hope that the aims of the Institute and the allied societies would always reach a high ideal. The advancement of architecture could only be attained by well-directed and enthusiastic efforts, by a spirit of self-sacrifice, and by whole-hearted devotion to their noble art.

The next toast was "The Edinburgh Architectural Association," proposed by Mr. J. S. Gibson, Vice-President, and coupled with the name of Mr. Hippolyte J. Blanc, President of the Edinburgh Architectural Association. Mr. Gibson said it was fifty years since the Association was formed—he believed by nine members of the profession, of whom four were still living, two of whom had left the paths of architecture and devoted themselves to other pursuits—more lucrative, he hoped. The third was their respected and esteemed City Architect, and the fourth, he believed, was Mr. G. S. Aitken. It must be very gratifying to those gentlemen and to all the older members of the Association to think that their efforts in founding the Association had resulted in enlisting the sympathies and the help of the cultured citizens of Edinburgh and also of those members who devoted themselves to other methods of making life enjoyable and profitable, who were necessary not only to the architect, but the whole community. The education of the architect was incomplete without the help of laymen, and they were very grateful to the Lord Justice-Clerk for his many practical suggestions. Architects throughout the country would be extremely grateful if they could have the co-operation of the municipal authorities in the real and true education of architects. The architectural exhibition of drawings ranging back fifty years to be seen at the Mound, for instance, if it could secure from them and their friends their attention and study and their comparison with modern methods of architecture, it would influence people to take a sensible view of work which architects did in towns, and would do something to raise the tone and appreciation of architecture and would make the architect feel that his work was receiving recognition, and so get him to give of his best, and would be conducive to the common good. The use of durable and good building material had conduced to the production of good work, and the effect of the influence of building material on design was better known and more appreciated now than it had been for many years past. He wished all success to the Association, and he hoped that its work in the future would be vital and even more beneficial in the future than in the past, and he was sure that it had the heartiest good wishes of every member of the Institute.

Mr. Blanc, R.S.A., in reply, said that on behalf of the Edinburgh Architectural Association he acknowledged with cordial appreciation the kindly recognition extended to them. They felt in this jubilee year that they had been fortunate in the honour of having secured the presence of so representative a contingent of the Royal Institute of British Architects as had found their way to that apparently cold, inhospitable region. If their act in inviting the Royal Institute of British Architects to make Edinburgh its meeting-place was a bold one, they took courage in the reflection that they had no reason to be ashamed of the architectural treasures which that beautiful city could show. They were emboldened by the further reflection that the city for well-nigh a century could claim to have been the cradle of architectural genius, from which had gone forth all over the islands some of the ablest exponents of the architectural art of the period. The Adam brothers were Scotchmen. They gave Edinburgh many refined types of their masterly genius before settling in London. Chambers gave them their Royal Bank and Duddingston House before he went south. Burn supplied almost all Scotland's limited requirements of his day before leaving for London, in 1844, to complete the great record of 700 works—his lifetime labours. Generations of Milnes distinguished themselves in Edinburgh before migrating finally to take their laurels in London. Of more modern men, among many, two prominent names of Edinburgh-trained men, Brydon and Young, were on the roll of honour among architects of fame in the great city of London. But by the "dropping south" of those artists Edinburgh was not left without talent, for if they stood on any of the eminences bordering the city there could be pointed out a host of edifices, erected during the last half of the XIXth century, which would do credit to any city, ancient or modern. It might be, as he had frequently observed, that familiarity with the charming monuments of which Edinburgh boasts blunted the citizen's sense of appreciation; but they ventured to hope, from the appreciation of the architectural worth of the city implied by this complimentary visit of the Royal Institute of British Architects, that the city (and in this he comprised the civic rulers and the citizens) might be stimulated to a greater recognition and appreciation of what they possessed, and as a result might more earnestly strive to preserve its amenity in all future developments. That the Association had not been during these fifty years inactive, but had in a quiet, unobtrusive manner endeavoured to interest and educate the public taste by persuasive instruction, and not by aggressive clamour, might be recognised in the following. When the Association was instituted fifty years ago there were nine members. To-day the public appreciation of it was evidenced by the increase of membership to nearly 400. It had always been an association of architect and collateral members—an amalgamation which had been the strength of the Society in this comparatively small community. For several years the Society carried on its affairs in camera, but in 1868, recognising it had a mission, it opened its doors and announced the experiment of popular evenings. On these occasions the public were invited to illustrated lantern lectures upon some phase of architecture popularly treated. The lectures were successful

in interesting and instructing the public. For the instruction of its members there was initiated about the same time a scheme of visits to buildings in progress, where details of construction could be seen and explained. To this step succeeded visits to churches and castles in the neighbourhood, and under the able and learned guidance of Messrs. Macgibbon and Ross there were opened up many architectural art treasures previously little known and unheeded, until at last they had succeeded in laying under tribute and recording in the printed *Transactions* nearly every structure of any art or historic value, so much so that, like Alexander of old, they had so sighed for more material to master that they had ventured an invasion of the architectural riches beyond the Border by a visit recently made to York. For the further advancement of the professional members, and in view of the lack of systematic architectural education for students, a scheme of class instruction was initiated, at which lectures were given on specific subjects towards the preparation of designs to be undertaken by students. These were most popular and successful for several years, but through overcrowding occasioned by the limited accommodation they possessed their efforts were seriously hindered. On the evacuation by the Society of Antiquaries of rooms in the Royal Institution a petition was presented to the Board of Manufactures for the use of accommodation there, and after a time, through the strenuous efforts of the Association, there was established in 1893 what had been known as the School of Applied Art. The object was to extend the teaching then being carried out under such improved conditions as would make it meet the requirements of students in the building crafts who would become associated with the architect's work. The birth of the new scheme nearly cost the parent its life, for the Association (at all times too generous to become financially strong) crippled itself seriously by its self-imposed burden of financially supporting its offspring. Notwithstanding these larger efforts, classes for study and practice of design were still conducted by the Association's junior section, and money prizes were annually awarded from contributions liberally donated by the members. The Association's energies towards interesting the public had been further shown in its promotion of exhibitions of architectural work in 1885, and again this year. But "Tout vient à qui sait attendre," and as not the least of its achievements the Association gladly acknowledged and boasted the accomplishment of a long-cherished desire by having at last succeeded in persuading the Institute to make Edinburgh a temporary resting-place in its official pilgrimage. By a fairly long course of strenuous effort to make the art of architecture of some attraction to the public, and even to their own members, their Association felt entitled to claim that it had justified its formation and existence. Under the recent amalgamation with the Institute they looked forward confidently to an increase and strengthening of friendships, and he might safely say they should be found among the most loyal of its branches. Let other cities and architectural associations prosper, but let the Edinburgh Architectural Association flourish was his fervent prayer.

Mr. John Slater proposed the last toast, *i.e.*, "The Guests." He said they would all agree that it was a toast that could in no wise be omitted. The Royal Institute of British Architects, whether it held its dinner in London or in any provincial centre, was always delighted to welcome members of different professions or gentlemen engaged in public work. It was good for them as architects to foregather with gentlemen of other professions, because it enlarged their sympathies, and he hoped the guests would be glad to be there that night. They had with them a number of very distinguished visitors. The Lord Provost was the head of the municipality, which had in its charge this supremely beautiful and interesting city—interesting in its memorials of a great past and beautiful in its modern adornments—and he was quite sure from what they had seen that day that the councillors of the city were fully alive to the responsibility of their position. There were other distinguished guests present as to whose titles it might be forgiven an ignorant southerner, perhaps, if he was not quite acquainted with what they connoted. He thought they must feel envious of Scotsmen in having the opportunity of attaining to such an office as that of the Lord Dean of Guild. Most of these offices were of interest, and no doubt they derived from remote antiquity, and they contrasted favourably with such commonplace titles of the south as Official Referee or Superintending Architect. He quite agreed with Mr. Stokes that architects in the south would be glad to have some such office amongst them as that of Dean of Guild Court. They also had present the Provost of Leith and Sir T. Gibson Carmichael and others, but he would associate with the toast the name of a gentleman who had always taken a great interest in what was one of the most important subjects of municipal business, viz., hygiene and sanitation. He alluded to Sir James Russell.

Sir James A. Russell, LL.D., said it was a great honour that he should be allowed to be spokesman for the guests, who thanked the Institute warmly for their hospitality, and they thanked them still more for giving them an opportunity of becoming acquainted with some of the members of the Institute and of becoming associated in some small way with those who belonged to that great and noble profession. It was a curious fact that over and over again, from remote times, architecture had been compared to music. It had been called music in space, or frozen music, and all must recognise that that description was true. Everyone who looked at the Scott Monument, at Heriot's Hospital, at Rosslyn Chapel, to speak of buildings near them, must feel that Madame de Staël expressed their feelings when she said that the view of such a monument was like perpetual and fixed music—"La vue d'un tel monument est comme une musique continuelle et fixée." It was something for the guests to be allowed to be associated with the feelings and aims and works of those who were creating this glorious music in our midst—something which was not sold, but which was constantly exercising an educative and beneficial influence in the minds of the public who walked along the streets. They liked to be associated with those who wielded power in the world, and they felt great pleasure in being associated with those who were in reality the historians of all ages, who in their works marked the state of society—the manners, the feelings, the customs, and even the climate of the places where they practised their art. What did one know of ancient cities—of Greece, of the East—but for the architects whose names had perished. They rejoiced to make the acquaintance of those men who had been disciplined by the experience of all trades—who were artists and men of science, and who provided for us such intellectual, as well as emotional, delight as we experience in seeing their works. It had been said that it was the humble men who dared to do bold things, and we must recognise that many bold things had been done by members of the profession—things which ought to hand down their names amongst the immortals. But a very curious circumstance was discovered when we tried to find the names of the architects of some of the great buildings of the past, for they were unknown or obscured. The names must have been known at the time, but no one seemed to think it worth while to preserve them for us to-day. In regard to local architects, the members of the Edinburgh Architectural Association, in both their corporate capacity and as individuals, had taken a great part in public affairs of the city. They had led every movement for the promotion of art training, and especially of applied art training, in the town, and they had sacrificed their means and time in doing so. They had invariably come to the front when any such question had become a matter of public debate, and they had given Edinburgh two, if not more, expositions in the shape of the exhibition of drawings by famous works or projected works, which had helped greatly to promote public taste in Edinburgh. He trusted that members of the Institute would have time to look in at the Exhibition at the Mound, to which Mr. Blanc had made reference. In all the efforts of the architects of Edinburgh for the public weal, and in all the movements by which they had come before the public, he could not recall a single instance where they worked for the personal advantage of the profession or of themselves as individuals. He thought that it was a noble testimony to the members of the profession that although they had been prominent in all public questions relating to the beauty of the city—in questions of art, etc.—they never said a word for themselves.

The proceedings were shortly afterwards brought to a close by the company joining in singing "Auld Lang Syne."

Rosslyn Chapel.

On Saturday morning some of the members of the party visited Rosslyn Chapel, which was described by the Rev. John Thomson, F.S.A. (Scot.). Rosslyn Chapel, he said, or, as it was intended to be, the Collegiate Church of St. Matthew, is situated at the south-east of the village on the edge of a steep grassy bank, sloping down to the Esk. The church was founded by Sir William St. Clair, third Earl and Prince of Orkney. He succeeded his father about 1417, and built a large part of the present castle and made other improvements and enlargements. The foundation of the chapel was laid in 1446 and the building occupied about thirty-six or forty years, and the cost must have been, estimated at the present rate of wages, about 400,000*l.*

The rev. gentleman described the many points of interest of this unique building, and at the close a vote of thanks was accorded to him on the motion of Mr. J. T. Baillie.

Heriot School.

Visits were also made to George Heriot's School, the leader being Mr. Blanc. The building is a rectangular structure, the interior quadrangle of which measures about 90 ft. on each side. The school was founded in 1628 from a bequest by George Heriot, Jeweller to the Court of James VI., and was built for the maintenance and education of a limited number of sons of merchant burgesses. By prudent investment the original funds have largely increased, and the benefits correspondingly extended by the erection of additional outdoor schools. Originally the boys were maintained in residence, but now the institution is conducted as a day school for foundationers and others. The architect was William Wallace, King's Master Mason, and its prototype in details is probably from Denmark. There are many examples of its detail in and around the city. There is nothing to support the statement that Inigo Jones had anything to do with the design. The approach to the school was originally on the north side, and this accounts for the special richness of the treatment of the northern elevation, especially the façade of the arched pend. Within the quadrangle, the chapel building is seen on the south side and the dining-hall on the west side. Classrooms are distributed on the north and east sides. Both internally and externally the elevations are marked by a most liberal display of carved ornaments, symbols of George Heriot's craft; monograms and mottoes, very appropriately and decoratively treated. In 1659 Cromwell's troops occupied the building. In 1820 Lauriston Place, on the south, was formed and the present lodge, designed by Playfair, was erected.

A hearty vote of thanks was accorded to the Principal of the School, Dr. Lowe, and to Mr. Blanc, and the day's proceedings were brought to a close.

For members of the party who remained until Monday a visit had been arranged to the works of Messrs. Redpath, Brown, & Co., Ltd., steel girder manufacturers.

THE ROYAL SANITARY INSTITUTE:

DUBLIN CONFERENCE.

THE following is the continuation of our report, unavoidably held over last week, of the Conference of the Royal Sanitary Institute recently held in Dublin:—

The business sittings of the Conference opened at Trinity College on the 26th ult., when there was a very large attendance of delegates. The official list showed that 184 Government departments, local authorities, public and private institutions, were represented, and amongst these were the Architcural Association, the Architectural Association of Ireland, Civil and Mechanical Engineers' Society, Congested District Board for Ireland, Dublin

Sanitary Association, Dublin Port and Docks Board, Edinburgh Sanitary Society, Incorporated Association of Municipal and County Engineers, Junior Institution of Engineers (Professor W. E. Lilley), Liverpool Engineering Society, Port of London, Metropolitan Asylums Board, Royal Institute of Architects (Ireland), Sanitary Inspectors' Association, Surveyors' Institution (Irish Branch), the War Office, etc.

Sanitary Administration in Ireland.

Sir Charles Cameron, who presided, introduced the subject of "Poor Law and Sanitary Administration in Ireland," but confined himself almost exclusively to the sanitary question. He pointed out that the Irish Public Health Act of 1875 constituted all the poor law medical officers *ex-officio* medical officers of health, and this was now generally conceded to have been a mistake, for many of them disliked the new functions, especially as, with few exceptions, the salaries were very small, often 10*l.* a year. So far as the large towns are concerned, the district medical officers of health perform on the whole very good sanitary work. In the rural districts they are handicapped very largely. They have not efficient sanitary sub-officers. The rural district councillors are practically the boards of guardians, who elect and pay them as dispensary physicians or medical officers of the workhouses. The health officers, whenever they make sanitary reports, are not unlikely to give offence to some one or other of the rural district councillors. He thought it might be safely assumed that with the greater number of rural districts in Ireland the sanitary laws were practically a dead letter.

In the discussion which followed Dr. E. Magennis gave a number of particulars regarding the sanitary condition of Irish workhouses, which he characterised as pestilence houses.

Surgeon-Colonel Flinn remarked that during the time he had been medical inspector under the Local Government Board he could bear testimony to the fact that the sanitary authorities throughout the country had been gradually arising to the necessity of improving the public health conditions of both rural and urban districts.

At the conclusion of the discussion the following resolution was agreed to:—"That this Conference is of opinion that it would be desirable to have county medical officers of health with sufficient staff of qualified sanitary inspectors appointed in Ireland, and that the Council of the Royal Sanitary Institute be requested to take steps to urge this opinion upon the consideration of the Government."

Sanatoria and Consumption.

Professor E. J. McWeeney (Bacteriologist to the Local Government Board of Ireland) read a paper on "The *Rôle* of Sanatoria as a Factor in Checking Tuberculosis," in which he expressed the view that since the campaign against consumption must start somewhere—the point at which to start is the provision of a working-class sanatorium in each populous centre. Dealing with the conditions necessary for the success of the sanatorium, the speaker said the situation should be suitable for the contruction specialised with a view of (*a*) dust prevention and ready cleansing; (*b*) avoiding draughts, whilst securing the maximum of fresh air; (*c*) providing arrangements for the frequent bathing of the patients, and the adoption of those hydro-therapeutic measures which are an essential portion of any serious attempt to cure the disease.

Dr. H. Handford described the working of the Nottingham Sanatorium for Consumption.

Professor Anthony Roche thought that the results of the sanatoria did not warrant the heavy cost. Sanitary precautions and better housing would in his opinion be more desirable.

Dr. W. G. Willoughby (Eastbourne) said the erection of expensive sanatoria throughout the country had done a great deal to frighten local authorities from incurring the expense. The expense was the more absurd when one considered the homes which the bulk of the patients came from, and it was to be hoped that the example of the large sanatoria known as the King's Sanatoria at Midhurst, would not be followed.

Mr. E. T. Hall, F.R.I.B.A., said it was not necessary to build a new hospital for the treatment of consumption. Some years ago he designed a very large infirmary in the South of England (800 beds), and four special wards were made for the treatment of consumption. Further, they made the roofs all flat, so that patients could be treated on the open-air system. That could be done in any of their hospitals or infirmaries, and it would be a very inexpensive way of dealing with advanced cases. In the case of the hospital he had referred to the results so far had been very satisfactory. With regard to sanatoria proper, previous speakers had laid stress on the fact that they were educative as well as curative, and there was no doubt that they were very educative. With reference to the point which had been raised that consumptive patients must be cared for after leaving the sanatoria, he would like to make a few remarks. One of the great features of the sanatoria in Germany was that the patients lay down from eight to ten hours a day, and that, he ventured to suggest, was a dreadful way of treating poor men, because if they were brought back to health under conditions which could not be continued it was ridiculous. At the Consumptive Sanatorium of the Brompton Hospital at Frimley, which he had the honour of designing, Dr. Paterson had gone on an entirely different method. He had abandoned the German system of a rest-cure, and his practice was not to allow any men to lie down for more than three-quarters of an hour per day, unless, of course, it was a very bad case; and the men worked from seven o'clock in the morning till five o'clock in the afternoon. They gradually got so strong that it was amazing to see them. The other week, at a garden-party, sixty discharged patients were present, and they looked as well as any ordinary workmen. The doctor was building a reservoir to hold 6,000,000 gallons of water, and the men were engaged in digging and making concrete, and every bit was being done by them. He was talking to one of the discharged patients, and asked him how he found the factory after being at the sanitoria, and the man told him that when he got back he first got one or two men to allow the windows to be open, but now there was not a single window closed during the whole of the working hours of the day. That was an illustration to show that the sanatoria was a perfect school of hygiene, and they could not do better than give such lessons all over the country. One of the difficulties had been the great expense, and he agreed with what had been said as to evil having been done where such large sums had been spent. They spent a good deal at Frimley, but nothing like what had been spent in other places. One of the great points, of course, had been that every thing should have rounded corners and tiled walls and so on. He had been trying to devise a cheap sanatorium that could be used for the million, and he believed that he had succeeded. He had made a design of a sanatorium that could be extended, so that, beginning with sixteen beds, they could extend it by units of eight beds at a time to any space they liked. He believed that such a sanatorium could be built at a cost of from 85*l.* to 100*l.* ber bed, including administration buildings, which was about the bedrock price for such a thing.

After further discussion, the Congress adjourned.

Economic Housing of the Working Classes.

At the sitting of the Conference on Thursday, Mr. P. C. Cowen, M.Inst.C.E. (who presided), read a paper on "The Economic Housing of the Working Classes in Town and Country."

Mr. Cowen, in opening, remarked that Dublin was full of interest to the architect and the antiquarian, and he regretted that no time had been set apart for the disquisition on the beauties of old Dublin by Sir Thomas Drew. He should greatly desire to touch upon many points of interest to members of the Institute, with the view of indicating the progress made in matters affecting the public health and public commerce in recent years; but the time at his disposal might be most usefully spent in directing their attention to what had been done in Ireland in connexion with the great question of the housing of the working classes, which had engaged so much attention since the first Acts bearing on the subject were passed through Parliament in 1851 by the late Earl of Shaftesbury.

Continuing, the speaker said that in Ireland, as in England, the younger members of the rural community, whose views of the possibilities of life have been widened by an education of a kind which was beyond the reach of their fathers, are not content to live on in their native environment, and flock in an increasing proportion to join the life of more varied interests to be found in towns, where, though they as a rule do well on account of their superior physique and vigour, they cause a congestion in the labour market, and crowd out the feebler folk who constitute the unemployed and unemployable in the city. It has now been long recognised that organised efforts should be made to ameliorate the lot of labourers in the rural districts, and to help the working classes in our towns to live a healthy life. But it is in only comparatively recent years that the *laissez faire* policy has been frankly abandoned in connexion with this question, and there are many who are still of opinion that, unless satisfactory balance-sheets on a commercial basis can be produced with regard to such schemes, they should not be undertaken.

Public opinion now, however, generally agrees with Goldsmith that

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay,"

and while we have not yet re-enacted the statute of the 31st year of Elizabeth, which provided that no cottage should be erected without having 4 acres of land attached to it, the attention of Parliament has been steadily directed in recent years towards measures calculated to improve the dwellings of the people.

The waste of capital and revenue involved in the conditions of life in slums or insanitary hovels is now being generally recognised, and the perils to all classes of the community caused thereby have become manifest. We cannot afford to allow such conditions to exist, and it is the truest economy to remove them.

In 1895 Dr. Bowmaker attributed the want of success in the application of the Housing of the Working Classes Acts to apathy on the part of local authorities, who, he stated, were unwilling to take action to remedy unsatisfactory conditions, or even to prevent the growth of such conditions.

In 1900 the Local Government Board pointed out that local authorities should have a house-to-house inspection in their districts to ascertain what nuisances call for abatement and what houses are unfit for human habitation, but I am not aware of any really effective action in this respect outside a few of the larger cities. There is no doubt that the primary need in the case is efficient inspection.

In the report of the Select Committee on the Housing of the Working Classes Acts Amendment Bill, lately issued, it is stated:—

> "The house famine in town and country which often exists in regard to the working classes is incontestable. The many investigations, Royal Commissions on Housing and Labour, etc., Select Committees of the House of Commons, and official departmental reports have placed the fact beyond controversy," *and also* "that however cheaply cottages may be built, they cannot be erected in the ordinary rural districts . . . so as to cover interest and sinking fund and the usual annual outgoings within the rent-paying capacity of the labourer."

There is a special reason why a liberal policy is necessary in Acts affecting agricultural labourers in Ireland, as the reports of Mr. Wilson Fox, Labour Commissioner of the Board of Trade, show the average rate of earnings per week (including all allowances in kind) of agricultural labourers in Ireland in 1898 was less than two-thirds of the average rate in Great Britain, and ranged from 8s. 7d. in co. Mayo to 12s. 6d. in the counties of Antrim, Down, and Dublin.

In July, 1906, before the Select Committee on the Housing of the Working Classes Bill, Mr. Wilson Fox gave evidence that rural housing cannot at the present time be developed upon an economic basis without some form of subsidy or cheap loan, and that even with a sixty-year period for a loan at 2 per cent., a cottage costing 150*l.* should be let at 2s. 6d. a week to cover the loan charges, rates, taxes, water supply, repairs, insurance, and collection.

The first Labourers' (Ireland) Act was passed in 1883, and at March 31, 1906, 20,654 cottages had been built, and 887 were in course of erection. For these cottages loans amounting to 3,415,280*l.* were sanctioned, equal to about 159*l.* per cottage with plot. These loans are repayable by an annuity, covering interest and sinking fund, of

4*l.* 17s. 2d. per cent., with a period of fifty years.

But the Labourers' (Ireland) Act, 1906, a great improvement in the financial facilities for building cottages was effected, and the district councils may now obtain loans not exceeding, in all, 4,250,000*l.*, repayable by an inclusive annuity of 3¼ per cent., and the Government has undertaken to pay 36 per cent. of the loan charges, so that only 64 per cent. of 3*l.* 5s., or slightly less than 2$\frac{1}{12}$ per cent., will be payable by the district councils for interest and repayment of the loans, for which the period is sixty-eight and a half years. During the passage of the Bill of 1906 it was stated that the cost of a cottage and plot should not exceed 170*l.* On this assumption the 4¼ millions made available should provide for the erection of 25,000 cottages with plots.

With a rent of 1s. 3d. a week for a cottage and plot costing 170*l.*, a deficit of 5*l.* 0s. 2d. on loan charges alone was inevitable until the Act of 1906 was passed, but, under the term of that Act, a similar deficit of only 5s. 9d. per cottage will fall upon the local rates. Of course, in each case the cost of maintenance, insurance, collection, etc., has, in addition, to be met by the local authority. Mr. Wilson Fox puts these charges, along with water supply, as 2*l.* 5s. a year, which is probably too high for Ireland.

Between 1883 and 1906 an annual Government grant of 36,811*l.* was distributed in Ireland, to be applied towards the cost of providing cottages under the Labourers' Acts. The allocation was made in proportion to the expenditure on roads and bridges in the various counties, and as such expenditure bore no relation to the urgency of the housing question, or the expenditure incurred in connexion therewith, the amount available from this grant for relief of the local rates in respect of each cottage provided varied from 11s. in co. Meath, where 1,589 cottages had been provided by November 1, 1906, to 18*l.* in co. Armagh, where the cottages provided only numbered fifty-nine.

Under the Act of 1906 this annual grant is reduced to 30,811*l.*, and will now be distributed according to the number of cottages actually provided prior to November 1, 1906. It will relieve the local rates to the extent of 1*l.* 8s. 8d. for each cottage provided before the loans were obtainable on the very special terms of the new Act.

Up to 1906 only about 2 per cent. of the total number of cottages was erected in Connaught, and less than 10 per cent. in Ulster. In the latter province a number of cottages with weaving rooms attached have been erected for hand-loom weavers of linen.

The rents now charged throughout the country for a cottage and plot of at least ½ acre, provided under the Labourers (Ireland) Acts, vary from 6½d. to 2s. 6d. a week, the general average being 11d. a week, but in Mr. M. O'Sullivan's excellent book on these Acts 1s. 3d. a week is indicated as an average rent which might fairly be expected. It was apparently never expected that the rent would meet the annual charges fully, and the original Act provides that the district council may levy a rate not exceeding 1s. in the pound for the purposes of the Act, and this limit was closely approached in recent years in parts of the counties of Cork, Limerick, and Waterford.

In the report of the Select Commission already referred to the opinion is expressed that the difficulty as to rent would be largely diminished by the addition of land to the cottage, and one witness who has given great attention to the study of rural conditions in England—Mr. Rider Haggard—said:—"The real solution of all this cottage question is small holdings: give the men some land—a small holding—and they will soon find their own houses."

Opinions, I think, widely differ on this point; much evidently depends on the quality of the land and its proximity to good markets. Small holdings are very plentiful in Ireland, and the results are not altogether satisfactory. So far as I can learn, the wisest view as to the Labourers (Ireland) Acts is that the most pressing part of the work to be done is to supply sanitary houses of moderate dimensions and cost with a resonable garden plot, and that there is a danger, if great economy is not exercised, that, even with the facilities of the Act of 1906, the task will become impossible on account of the great disparity between outlay and revenue and the large number of cases to be dealt with.

Until the present year designs for cottages under the Labourers (Ireland) Acts were prepared by architects for the local authorities, in accordance with simple general requirements framed by the Local Government Board; but, in accordance with a somewhat general desire, the Board has now issued a set of eight plans for homes with three or four apartments, and a general form of specification which contains a number of alternative clauses to suit varying local conditions.

Four of the plans were obtained by means of an open competition, the terms of which called for a kitchen and three bedrooms, an open shed, and simple pail-closet, a height of ceilings on the ground floor of 8 ft., and a minimum net cubic capacity in the apartments of 3,300 cubic ft., at a cost not exceeding 130*l.* All the prize plans are for one-storied houses, and the particulars as to gross and net cubic contents are as under-noted:—

—	First Prize Design.	Second Prize Design.	Third Prize Design.
Cubic contents of building (excluding out-offices), taking outside dimensions on plan and height from mid-level of foundations to mid-level between eaves and ridge	Cubic ft. 7,500	Cubic ft. 6,255	Cubic ft. 7,223
Net cubic contents of each room—			
Living room	1,500	1,233	1,305
Bedroom A	975	614	938
" B	975	918	650
" C	900	612	650
Total	4,350	3,347	3,543

About 400 sets of plans were submitted in the competition, and many of the designs were of considerable merit. Those selected have been very freely criticised, and some interesting letters and original designs have recently appeared in the Dublin newspapers. It will, I think, be readily conceded that any such plans would be open to adverse criticism. Some critics urged extreme provisions as to ventilation, and others laid stress on the value of cosy corners. Nearly all the criticisms and suggestions were, however, of some value, and it is to be hoped they will aid in the solution of the difficult problem how to secure a satisfactory labourer's cottage at a cost which bears a reasonable relation to the rent obtainable and to the available financial resources.

Two enterprising firms of contractors have erected for the Home Industries Committee at the Irish International Exhibition cottages on the designs which obtained the first and second prizes in the competition, but it is probably only fair to them to state that the time afforded for erection was very limited, and also that the roof of the second prize cottage as erected is higher than and not quite so picturesque as the roof shown on the premiated plan. I understand that these firms are prepared to erect cottages according to the prize designs, with or without slight modifications, for a price closely approximating to the sum of 130*l.* already referred to; but, of course, to secure a low cost they would probably require to have a contract for a considerable number of houses.

In county Cork contracts have already been taken for the erection of a number of cottages, according to the third prize design, at less than 130*l.* for each cottage.

In Ireland, as might be expected, the operations of the sanitary authorities as to building houses under the Housing of the Working Classes Acts have not been very extensive, though the attention of the various councils has been carefully directed to the purpose.

The Act of 1903, which gave added borrowing powers for this purpose, does not extend to Ireland, and, except in the case of the county boroughs and a few urban districts which obtained local Acts, the main difficulty has been one of borrowing powers. No Government grants or special terms for loans are obtainable under the Housing of the Working Classes Acts; and at present 4 per cent. is the rate charged for interest only on Government loans for a period of forty years.

Up to March, 1906, the local authorities in Ireland under these Acts provided accommodation for 4,279 families, at a cost of about 180*l.* per family, or 789,874*l.* in all. The average rent is about 2s. 4d. a week, and the average annual loss about 3*l.* 5s. per annum. In the Dublin district, including the townships, most interesting examples of municipal effort in this direction can be seen, and the magnificent rehousing schemes of Lord Iveagh are worthy of special attention, as are also the varied and able designs of the City Architect. In the Dublin district the Dublin Artisans' Dwelling Company has provided 3,500 excellent dwellings, at a cost of about 600,000*l.*; and if to these are added the dwellings provided by the Iveagh and Guinness Trusts, the Suburban Artisans' Dwelling Company, and the Association for the Housing of the Very Poor a total of 4,665 dwellings, costing about 750,164*l.*, is reached. It is interesting to observe that these Associations have provided more houses in the Dublin district than have been provided by the town authorities in the whole of Ireland.

I would here draw attention to a few points in the recommendations of the Select Committee on the Housing of the Working Classes Acts Amendment Bill, which appear to be of very special interest. It should be noted that in England and Scotland these Acts apply to rural as well as urban districts. This Committee recommends:—

(1) That the administration of the Public Health and Housing of the Working Classes Acts should be transferred from the rural district councils to the county councils.

(2) That a great improvement in sanitary inspection should be provided for, and requires the appointment of a staff of county sanitary inspectors who should be properly qualified whole-time officers and act under a county medical officer of health, who should also devote his whole time to his public duties.

(3) That a register of survey of all buildings intended for human habitation should be compiled and revised periodically.

(4) That the county councils should make by-laws for every district.

(5) That the Local Government Board should appoint a special Housing and Public Health Department, with a staff of travelling sanitary and housing inspectors to supervise the administration of the public health and housing laws by the county councils and their executive officers.

(6) That the Treasury should lend money for the purposes specified in the Report at the lowest rate at which the Treasury can borrow—
  (*a*) To local authorities, up to the full amount of the security;
  (*b*) To public erecting societies, up to 75 per cent. of the security.

(7) A simplification and codification of the laws under the Public Health and Housing Acts.

The Select Committee expresses surprise that the Housing of the Working Classes Acts have not been applied to a greater extent for the adaptation of old buildings, but experience in Ireland has shown that as to rural districts such adaptation is usually less economical than new building.

The great influence of a good caretaker on the condition of working class dwellings and on the cost for maintenance is not sufficiently regarded, and I am convinced that a city may possess an abundant supply of cheap homes in fair condition, and yet be in great part insanitary on account of the domestic habits of the people. An improvement in these habits is urgently required, and can only be secured by education in simple hygiene and a much more rigorous inspection of the sanitary condition of houses than is now provided for. The Swiss method of collecting along with the rent a fixed sum for repairs, and returning to the tenants at the end of the year any portion of such sums not actually expended, has much to recommend it, as it tends to secure "the stitch in time." Local authorities in Great Britain and Ireland require additional powers to regulate the laying out of streets and buildings on the outskirts of the towns to prevent them from being encircled with mean streets.

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As to the provision of new houses for the working classes in towns, the operations of voluntary societies or companies should probably be looked to as the most hopeful factor, and it is most desirable that such operations should be aided as far as possible by the State."

Sir L. H. Ormsby said he considered that the proper housing of the working classes was a form of insurance, for insanitary homes were the source of disease, which in due time reached the homes of the well-to-do. There was no more important matter which the members of that Institute could discuss with the view of arriving at some definite conclusion. So much depended on providing comfortable homes for their working classes. They blamed their working men for getting drunk, but he confessed that if he was forced to inhabit a single room with a number of children he would probably prefer the public-house. It was the bounden duty of the doctor, the architect, and the sanitarian to see what could be done to provide the poor with comfortable homes, and in Dublin a great deal had been done in that direction. The Dublin Corporation were often abused, but, having known Dublin for forty years, he knew the improvement which had taken place. In England and other places they were constantly hearing of "dear, dirty Dublin," but the Corporation had supplied a great many dwellings for the working classes, although, unfortunately, corporations did not seem able to make such buildings pay, and there was only one scheme out of a number that was made to pay for the sinking fund and interest. The Corporation carried out a clearance scheme near to St. Patrick's Cathedral, and the site and clearance cost 33,000*l*. Now, acting on behalf of a private company, he was able to acquire a site of the same area for 2,020*l*., which showed that private individuals could make better bargains than corporations. The Dublin Artisans' Dwellings Company had provided splendid dwellings and paid 5 per cent., and could have paid more. They, however, provided for artisans earning from 1*l*. to 3*l*. a week, who were only too anxious to pay a moderate rent and remain in a central area. Lord Iveagh and the Guinness Trust had also provided many beautiful houses, and Trinity College and the Alexandra Building Company were also doing good work. About ten years ago, however, it occurred to Sir Charles Cameron that, while many classes were provided for, the very poor were left without housing accommodation. Many houses were condemned by the public health authority as unfit for human habitation, and the result was that the occupants went into cellars, for there was no proper accommodation for the very poor. At Sir Charles Cameron's instigation a company was started with a capital of 20,000*l*., but only 5,000*l*. was subscribed at first. They bought four houses at a cost of 1,500*l*., and on the advice of their architect expended 1,500*l*. in putting them into proper sanitary condition. Afterwards more money was subscribed, and they built a block of dwellings in Somers-street, the most congested of the Dublin slums, and they gave one room with recesses, and supplied wire mattresses and all necessary sanitary appliances. They had a common reading-room open from ten in the morning till ten at night, and the people liked it very well. Private enterprise in his opinion did better than corporations, and, notwithstanding the drawbacks they had had since they set out, they were able to pay 3 per cent. to their shareholders.

Dr. Cameron (Leeds) pointed out that different towns had different conditions, and what was true of one town was not necessarily true of another. In London, for instance, there was a great dearth of houses for the working classes, although progress was being made there, as elsewhere, by better means of transit to enable people to get into the suburbs. In Liverpool it was absolutely necessary for people working at the docks to be housed in the vicinity of their work, and great things had been done there in attempting to house the people who had been displaced from the horrible dens in which they lived a few years ago. In Leeds their conditions were different, for their different industries were scattered in various parts of the town, and although they had done a great deal in the way of demolition—and he hoped they would do a great deal more—yet there was no great difficulty in getting housing accommodation in the centre of the town. In Leeds they had an Industrial Dwellings Company, which did a great deal of good in a way. They got hold of property in bad repair and repaired it, often pulling down some houses to give more air, and they saw that the people inhabiting the tenements lived cleanly lives. The question was: How much of this kind of work should be done by the State or the municipality and how much by private enterprise? It was a very dangerous thing to entirely kill private enterprise, because private enterprise in the long run must supply the greater part of the needs. They must have reasonable rents, and this necessitated practical prices for land and houses built at practical prices. They could not get the rents down to what people could afford to pay unless they could get houses cheaper than at present. As to land, it was well known that if they went away from the centre of the town it was cheaper. He would also put it to the architects connected with their Institute whether it was not possible to get much cheaper material than that used at present. It appeared to him that the building of large blocks of houses in the centre of the town was an expensive thing, for the carrying of the buildings so high necessitated heavier walls. Therefore he advocated going outside the town and providing proper tramway services. There was also the question of garden cities. Sir Titus Salt established one at Saltaire, in Yorkshire, and that had furnished a useful example of what could be done by a large mill-owner in providing for his workpeople. Changes, of course, had taken place, and Salt's firm was not doing what it once did, but the houses remained. This raised a question, which perhaps might seem an awful thing for him to say, but it was so—"Is the jerry-builder so awful a person as he is sometimes represented to be?" He would not allow the jerry-builder to do some things, but he certainly did not think it advisable that the houses of the artisan should last for ever. London was one of the healthiest of towns, and that was largely due to the fact that property was leasehold and the houses were being constantly pulled down. Such places as Saltaire, Port Sunlight, Bourneville, and the village of Messrs. Rowntree showed that industries could be carried on outside large cities, and if there were a combination of industries they would be able to deal with a larger number of people. He looked forward to the time when they would no longer build great barracks in the towns, but would take the industries into the country.

Mr. J. R. Dagg (Baltinglass) said that public opinion was undergoing a profound misapprehension with regard to the operation of those laws for the better housing of the labouring classes in Ireland, and which were entitled "the Labourers (Ireland) Acts." By the Act of 1883 the local sanitary authorities were empowered to raise loans for the purpose of building labourers' cottages. According to the census returns of 1881 there were in Ireland 40,665 hovels described in the following terms:—"The fourth class comprised all mud cabins or houses built of other perishable material having only one room and window." These one-roomed wigwams were occupied by no less than 90,292 families. Several statutes amending or extending this Act had since been passed, culminating in the Act of 1906, which came into operation on February 1 last. The loss per cottage under the old Acts, giving credit for a rent of 1s. 3d. per week, amounted to 5*l*. per year for loan charges alone, not including the incidental outgoings, which Mr. Wilson Fox had estimated at 2*l*. 5s. per year. The loss per cottage under the new Act in respect of loans was estimated at 5s. 9d. per year. Hence the entire rents would be absorbed by the outgoings. Two Parliamentary returns relating to the working of the Acts were issued in 1906, and he thought the public circulation of these returns would afford astonishing information. They showed that the legal expenses varied from 1*l*. per cottage in Wexford up to 75*l*. per cottage in Monaghan, the latter figure probably being the three-fold value of the fee simple of the plot. In future the provisions of the Labourers (Ireland) Order of 1906 would frustrate the inflation of law costs in cases of compulsory purchase, if not in agreement cases. Returns showed that the number of cottages applied for in the last completed scheme was 10,058, of which only 4,748 were passed. This was extraordinary in view of the fact that upwards of 40,000 more cottages had been applied for under the Act of last session. But it was more striking to note that it had taken numerous schemes year after year since 1883 to pass and build 21,000 labourers' cottages, and it would probably take as long a time to carry through the 25,000 cottages which it had been estimated could be provided under the provisions of the new Act. For one thing, there were not sufficient masons to build them in a few years. He thought a demand would inevitably arise for an extension of the system of State housing in the interests of those sections of the community. That demand could not logically be resisted, and its concession must lead to further financial embarrassment. A further result of the working of the Acts which must have serious consequences was that private enterprise would be completely extinguished. It had been well said that John Bull could stand most things, but not 2 per cent. The rents received for labourers' cottages represented a return of 1¼ per cent. on the outlay, which, allowing ¾ per cent. for the sinking fund, left a balance of ½ per cent. for interest. It was no wonder that the owners of tenement houses closed them up rather than waste money in their repair when called upon to do so by the sanitary authority.

Dr. Chalmers (Glasgow) remarked that the speeches which had been delivered showed the enormous difficulty of the subject. The tendency to congregate in town still went on, and the question arose whether they could deal with the housing question by itself—was it not rather a part of the whole social question. If they looked back on history, what did they find was the condition of the labourer? They regarded him as being entitled to poor law relief, and what was the difference between giving him poor law relief and giving him 2s. or 3s. a week in the way of house rent? He thought they complicated the matter by simply directing their view to the one question of housing and leaving out such questions as to how the labourer was to be fed, clothed, and educated.

Mr. A. B. Plummer (Newcastle) asked if a great deal of harm was not done by advertising the minimum cost of the erection of cottages to the public. People in outlying districts might find that houses were being built in the neighbourhood of Dublin for 160*l*. a house, and they expected to build cottages in outlying districts at the same price. When, however, they went into the matter and found that the cost would be a great deal more they abandoned the whole scheme. It would be quite as well if people were informed that cottages could not be built at the prices often given except in the most favourable circumstances. It had been mentioned that, with regard to the cottages shown at the Exhibition, the contractors were willing to build similar cottages at an approximate cost by building a large number together, but when a man found that the cost of building cottages in a country district was greater than that advertised in the Exhibition he abandoned the whole scheme.

Mr. J. A. Duncan (Athy) remarked that the local bodies in the eastern counties of Ireland were fully alive to the importance of the question, but he hoped they would see that the immense number of cottages which were going to be put up were proper cottages. In Kildare they had practically done away with the mud cabin and thatched roof, and there were now a large number of brick and stone cottages. Whatever were the disadvantages of the thatched cottage, one advantage was that it gave almost perfect ventilation, and he trusted the authorities would see to proper ventilation in the new cottages, for the people were not yet used to opening their windows.

Mr. Lawrie (Belfast) said he thought it was a pity to build isolated houses in the country. It was much better to build six or eight together, so as to get one water supply, for this was one of the great difficulties they had in rural housing. They wanted decent houses which could be cheaply built, and he thought they might be assisted in this by

having stock patterns. He did not mean that all the houses should be built of one design, but the doors and the chimney-piece and so on might be all the same. He was afraid that one thing often forgotten by architects was that timber cut out of the log was much more expensive than timber imported already cut. Another thing which counted was the cost of repairs, and they wanted to use materials which could easily be replaced. They must not employ materials which could only be got at one particular time. He knew of a large public building in which the architect specified for the use of a certain kind of slate which came from America, but now the roof wanted repairing they could not get any more of the slate. He saw no reason why concrete should not be more employed in the building of cottages. It would only mean bringing in the lime, for they could get gravel or broken stone anywhere, and could use the people for whom they were building the houses to do the work. He believed that concrete construction was only in its infancy, and that in time they would find the slabs sent out by manufacturers ready made. A remark had been made that jerry-building was not so bad, but there was jerry-building and jerry-building. He could not himself see why a house for a labouring man should be built to last for 200 years. All that was wanted was a house for the man to live in—he did not want a palace. Inspection was a thing which could only be done properly if rural authorities would join together. They now had these authorities paying 10*l.* and 12*l.* a year to men, but if they joined together and paid a salary of 200*l.* the work would be better done by a man who knew something about it.

Mr. Tighe said that in going round the Exhibition the previous day he was struck rather unfavourably with the cottages he saw there, and such cottages on the western sea board would be absolutely impossible. They had four doors and two windows and a fireplace in one room, and for six months of the year such a sitting-room would be entirely uninhabitable. It struck him as being somewhat like a stage-room in a theatre where for the purposes of the comedy plenty of doors and windows were needed for the people to go in and out. He thought it unfortunate that in selecting the designs a committee of architects was not consulted. In the administration of these Labourers' Cottages Acts the necessity of architectural assistance had been completely neglected. He understood that the architect in one place was a small publican with a taste for carpentering, and he employed his spare time in preparing plans for the cottages, which were badly planned and badly built. He trusted that the ventilation of this matter would cause wiser counsels to prevail. Now that the Local Government Board were sending out plans for these cottages it was possible for men who could not draw a single line to make a few alterations, and these men were calling themselves architects with the diploma of the British Government.

Dr. Boobbyer (Nottingham) said there was a necessity for providing in most of the large populous centres for the accommodation of people who must live near their work. Mr. Nettletold, of Birmingham, and the City Surveyor of Liverpool had given excellent demonstrations of the way in which it had attempted to be solved. In the Drury-lane district of London also accommodation had to be provided, and block buildings were erected, for there was no other possible way of affording efficient accommodation for these people. If they went to the Vauxhall-road neighbourhood of Liverpool they would see some extremely well-designed—almost artistic—blocks of tenement dwellings erected on some of the worst slums that ever existed. Dr. Boolbyer proceeded to deal with the government of these buildings, and advocated strict regulations.

The discussion then concluded.

Sewage Disposal.

Mr. W. Kaye-Parry, M.A., M.Inst.C.E., F.R.I.B.A., read a paper on the following subject:—"Could the Existing Statutory and Departmental Requirements as to Sewage Disposal be Relaxed in Certain Cases with Advantage to the Community?" He said the object of the present discussion was to elicit expressions of opinion both from professional men and urban and district councillors as to the desirability of relaxing, in some cases, the present statutory and departmental regulations relating to the discharge of sewage into rivers and streams.

The necessity for some regulations and restrictions in cases where the sewage is intended to be delivered into tidal waters or into the sea is not denied. Indeed, it would appear that a Foreshore Pollution Prevention Act is needed to safeguard the sea coast towns from the nuisance which is in some cases created by the delivery of crude sewage at outfalls so situated that the polluting liquid is not effectually carried out to deep water and dispersed.

But the towns which were present to the mind of the author when he suggested the subject for debate were those which are so circumstanced that the sewage either with or without treatment must eventually find its way into the nearest or most suitable river or stream.

The conditions which obtain in this country are very different from those which are found in many of the thickly-populated counties in England. Our population is small and is not increasing, and our country towns are not as prosperous as many of those in the more favourably circumstanced sister country. The ratable values are small, the area of charge is necessarily restricted, the borrowing powers are meagre, and the taxable capacity of the ratepayers is also very limited.

The author's own experience has convinced him that the principal reason why urban councils are so slow to embark upon schemes of drainage and sewage disposal is the consciousness that a really complete and effective system of sewers, together with fully-equipped works for sewage treatment, would place a load upon the shoulders of the ratepayers which they are quite unable to bear. Such a scheme to an engineer or a medical officer of health may appear to be almost a necessity, but to the townspeople it savours of a counsel of perfection which need not be seriously entertained.

Hitherto it has been the practice of the Local Government Board of Ireland to require installations of the same character and capable of doing the same work as those which are required by the Local Government Board of England. We are all of us prepared to appreciate the desire on the part of the Board to place our towns in as good a position in these matters as those of our English neighbours. If the public health necessitates the best and most effective works for the treatment of sewage, why, it is asked, should we lag behind England? Must we not exert ourselves to provide the means for the construction of these works, even if the expenditure involves great sacrifices from the long-suffering ratepayers?

This argument would be unanswerable if it could be demonstrated that any relaxation of the present regulations would have of necessity an injurious effect upon the health of the community, having regard to the distribution of our urban and rural population. But it must not be forgotten that in Ireland the rural districts are very thinly populated, and this sparse population very seldom depends upon the rivers on which our towns are situated to afford them a supply of potable water; nor are there many towns where the river water is used as a source or supply for the inhabitants themselves.

Generally when a town embarks upon a scheme for water supply the engineer is able to select a watershed within a reasonable distance from which a gravitation supply is obtainable. The author is aware that there are some cases where the river water is pumped up, filtered, and distributed, but this is quite the exception. On the other hand, the towns which have no proper waterworks usually rely upon wells, so that the cases where the water of a river which has passed through a small town, village, or hamlet is afterwards used for supplying some other centre of population with water are comparatively rare.

Again, many of our rivers are relatively large compared with our towns, whereas in the thickly-populated counties of England these conditions are often reversed.

The gravest danger to public health in many of our Irish towns arises from the pollution of the wells due to leakage of sewage from the sewers and drains. Very often the resources of the ratepayers will not admit of the construction of new sewers and purification works. Loans will not, as a rule, be sanctioned for the sewers unless purification works are also provided. The practical result is in many cases that nothing has been done to improve the sewers, and nothing will be done, perhaps for many years to come, unless some relief is obtained from the present regulations.

It often happens that the river on which such a town is built is so situated that the water is never used and never will be used for dietetic purposes below the town. Given these conditions, is it wise for the sake of mere sentiment to prohibit the discharge of the partly purified or clarified sewage into such a river, when the other alternative is the permanent pollution of the wells from which the inhabitants obtain their drinking water?

The author does not suggest that in any circumstances it would be permissible to sanction the discharge of untreated or partly purified sewage into any stream or watercourse if it could be shown that such discharge would either create a nuisance or expose the riparian owner or others, or their cattle, lower down to any danger to health. He is, however, of opinion that, provided the solids are removed as effectually as possible by some simple mechanical means, and provided the sewage is diluted with a sufficient volume of fully aerated river water, no real harm will be done if the water is not used for dietetic purposes. Even in cases where there is a very remote danger of such a contingency he is not sure that the great benefits which would accrue to the comparatively large population of the town by the construction of a proper system of watertight sewers might not outweigh any possible harm which might result from the discharge of imperfectly purified sewage into the river.

So far as nuisance goes, he believes that, provided the solids are removed by subsidence, efficient mechanical screening, or some other simple expedient, the dilution alone with the pure water will render the creation of a nuisance almost impossible, provided always that the river contains a large volume of water compared with the volume of sewage. But, further than that, he is satisfied that it can be demonstrated that the presence of the dissolved oxygen in the pure water has a directly beneficial effect in promoting healthy aerobic fermentation in the sewage which will effect ultimately the same result which is at present obtained by contact beds or continuous filters.

It has been sometimes contended that dilution of sewage with clean water is not a proper substitute for the purification of sewage by bacterial methods, but perhaps the answer to that objection is rather outside the legitimate sphere of an engineer's knowledge and experience, and the author leaves it to the distinguished chemists who have promised to take part in this discussion to express an opinion on this question. He is quite willing to content himself with pleading for those poor little towns who are unable to face the comparatively great capital outlay which is involved in the establishment of a modern sewage purification installation, and who on this account are precluded from carrying out the smaller and less costly, but much more necessary, work of providing watertight, self-cleansing sewers for the effectual drainage of their town. Such sewers are, in the author's opinion, indispensable for the protection of the wells of the town from pollution, and the subsoil from saturation with sewage from the badly constructed, foul, and leaking sewers which, to his personal knowledge, still exist in so many places.

Professor Adeney said it seemed to him that the subject might be discussed from two different standpoints—(1) the technical, *i.e.*, the prevention of over-pollution; and (2) administrative regulation and control. He should confine his remarks more especially to the first because it appeared to him that any change of statutory and departmental regulations which might become necessary would soon follow any real advance in the knowledge and the principles of practice of sewage disposal. The ideal position for experts to put the administrative body in would be this: having given the volume of sewage of the locality to be dealt with to the natural facilities for disposal, to what degree of purification must the sewage be carried, and what means must be taken to ensure that degree of purification. He thought that the experts would agree that at present they were not sufficiently agreed to give that ideal position. He would like to say that from his own bacteriological and chemical studies he saw no reason

against discharging sewage under proper conditions into rivers, providing that the engineers could devise suitable mechanical means for separating the solid matters. The solid matters must be separated; they must not be discharged into a stream because it meant permanent pollution. Unfortunately he did not think that bacteriologists were at present in a position to express definite views on the subject. They had, however, results of experiments to show that pathogenic germs were not unlimited in their powers of poisoning. Indeed, the tendency in America appeared to be to regard it as a better policy to accept a moderately polluted source of water for a public supply and thoroughly to purify its waters rather than to go to large expense in obtaining a faultless supply which might have to be purified in its turn at some later day. This was the view of Professor W. P. Mason, and the object-lessons he showed of the lowering of the death-rate in some of the large American cities subsequent to the installation of filters for the water supply gave warranty to that expression of opinion. He would like to quote from the writings of another American author, Mr. E. B. Phelps, who said:—"In England, where the subject of stream pollution has received careful study, the opinions of the experts on this question of standard vary greatly. The late Sir E. Frankland, in his testimony before the Royal Sewage Commission, restated the proposition advanced by him in 1874 that "there is no river in the United Kingdom long enough to effect the destruction of sewage by oxidation." On the other hand, the position taken up by Rideal, that all free oxygen, as well as the oxygen of the nitrates and nitrites, is available to complete the oxidation of the remaining organic matters, was supported by much of the testimony. The same views are embodied in a test proposed by Adeney (1895), who would incubate a sample of the effluent after diluting with river water in the proportion in which the two are mixed in the river. Then, if no putrefaction occurs, the effluent is satisfactory. This test represents the extreme view of that school of sanitarians who hold that if a partially pumped effluent can be supplied with sufficient available oxygen for the complete oxidation of the remaining organic matter it may with safety be discharged into the stream and the purification will be completely carried out within the stream. In justice to this view it should be stated that what is here attempted is apparently not the protection of the stream from pollution by diseased germs so much as an apparent nuisance in, or fouling of, the stream. The evident intention is to keep the stream in such a condition that it may be rendered fit for domestic use by further purification of the water. With our present knowledge at least this would seem to be the wiser provision. We know little unfortunately of the viability of diseased organisms in sewage and of the effect of the purification treatment upon them, while the ideal condition and the one toward which sanitarians should ever be working is the perfect purification of sewage from all pathogenic bacteria before discharge. It may be nevertheless better economy with our present information so to purify our sewage as to prevent that from seriously fouling the stream and thoroughly to purify all waters taken from them for domestic use." He thought that quotation clearly indicated the position of the subject before them for discussion. It was generally understood that the existing statutory and departmental regulations were more or less based on the results of the classical filtration experiments by the late Sir E. Frankland and upon the conclusions he drew from them and from other investigations. His experiments were models of accurate scientific investigation, but as he was unaware of the true agencies at work in river waters for their self-purification after pollution, viz., fermentative changes induced by water bacteria, it was not surprising that some of his conclusions had since been found ill-founded, and amongst these must be included the one that "there is no river in the United Kingdom long enough to effect the destruction of sewage by oxidation." As a matter of fact, it had been found that the waters of the rivers Aire and Don at their junction with the Ouse were practically free from unoxidised organic substances. The question for the chemist was what standards he was prepared to suggest to the Administrative Boards beyond which no effluent should be discharged into river waters. He thought chemists were agreed that these standards must be based on aeration tests, but they were not agreed on the formulation of the standard. He believed the time was very fast approaching when chemists would be able to agree on this all important subject.

Mr. W. Fairley, A.M.Inst.C.E., felt sure that those who went to the works which the Dublin Corporation were carrying out would see that the large corporations of Ireland were not shirking their duty, for they had carried out works which, as Englishmen, they might well be proud of. He took it that there were two Acts in force in Ireland with regard to purification—the Public Health Act, which he believed was practically the same as the English Act, and the Rivers Pollution Act, which applied to both countries. He thought Mr. Kaye-Parry was right in saying that where a town was situated on a river of fairly large size, the town might be allowed to carry out a system of sewers before considering the expensive question of sewage purification even. He looked upon sewers in a populous place as an absolute necessity, but to put down works for purification was very often a matter of expediency. Where it was possible to drain into a river with the precautions which Mr. Kaye-Parry had suggested, and no nuisance arose in consequence, there was no reason why the local authority should be compelled to spend a large sum of money purely to obtain a theoretical standard.

Professor A. Bostock Hill said he had had considerable experience of dealing with the question from a different point of view to any of the previous speakers. He was Medical Officer of Health for the County of Warwick, where they had the largest sewage works in the world, and also a large number of works ranging from those of medium-sized towns to those of small urban and rural authorities. Mr. Kaye-Parry's proposition seemed to be that in certain circumstances they were to connive at small local authorities breaking the law. At the present time the Rivers Pollution Act prevented the making of sewers and discharging the contents, untreated or insufficiently treated, into a river, and he did not see how any county council of England could allow such a thing to be done. It was suggested that the main thing to do was to remove from the sewage the suspended matter, and it almost seemed as if it were implied to some extent that that was the most important material in the sewage to get rid of. Of course, it was of great importance, but, however well clarified a sewage might be, yet in the course of a few hours, particularly in warm weather, secondary decomposition took place, and nuisance resulted further down in the stream. Those of them who had had many years' experience of modern disposal schemes must be aware that the main cause of the many failures was that the works had been carried out on insufficient lines. In other words, where it was suggested to a local authority that they ought to spend 20,000*l.*, they had been content to spend half or two-thirds, and disaster had resulted. He suggested that Mr. Kaye-Parry's partial treatment would lead to the result which was one they wished to avoid with the knowledge they had at the present time. Then Mr. Kaye-Parry said that in Ireland the main point they were desirous of looking to was the prevention of the pollution of wells. He took it that in a town where the wells had existed for a considerable time, with cesspits and leakages, there would already be a great deal of pollution, and he did not think the making of impervious sewers and allowing the sewage to discharge straight away would for months or years prevent the pollution of the wells that now undoubtedly existed. In the case of a small town with a large stream, if there was no nuisance to the eye, and the water was not used for drinking purposes, he did not think anyone would suggest that action should be taken against the authorities. They had to deal with cases as they existed, and if there was any sign of pollution it was the duty of the county authority to prevent that pollution. He thought in England they would have a great deal of difficulty in relaxing the statutory conditions.

Professor A. E. Letts said he had been looking forward to hear some results of the work which had been done by certain of the River Boards under the statutory powers, and he thought the results of the Ribble Joint Board formed an object-lesson regarding what could be done in thickly-populated manufacturing towns to improve the conditions of rivers. Mr. Kaye-Parry, however, suggested that they should concentrate their attention on a particular phase of the subject which was of considerable interest and importance, not only locally but elsewhere. The question, to his mind, presented three different aspects, *i.e.*, (1) the hygiene, (2) the purely scientific, and (3) the administrative. On the first point they could take a small, badly-sewered town or large village situated on a large river which was not used lower down for drinking-water purposes. The water used in the town would be supplied by surface wells, and they might suppose that the sewage got into those wells. Before he heard the last speaker he was going to suggest that if anyone of them had the administration in their own hands they would sanction new sewers without imposing conditions of sewage treatment. Some would go even further, and would not insist on clarification providing that the river was sufficiently large and swift. It was common knowledge that the sewage of some towns was thus disposed of without any evil consequences. Gloucester, with a population of 50,000, discharged the whole of its crude sewage, amounting to 1,000,000 gallons a day in dry weather, into a branch of the Severn. The method appeared to be quite satisfactory, and there was no complaint. The reason was that there was an enormous dilution of the sewage—300 times the volume of the sewage. From personal tests he knew that there were fish close to the outfall. He was convinced that there were numerous cases where no harm could be done by discharging sewage either clarified or raw into a non-drinking water stream, and that such a method of disposal was more reasonable and most economical where the conditions were favourable. On the other hand, he took it that it was essential to prevent at all costs the fouling of wells used for drinking purposes. Then they came to the purely scientific question as to whether dilution of sewage was a legitimate substitute for bacteriological treatment. He unhesitatingly answered in the affirmative with the reservation that this method of treatment was not a substitute, but really was a method of bacteriological treatment. He rather hesitated to discuss the administrative aspect of the question, but he took it that they would agree that in sewage disposal, as in all other matters, circumstances altered cases, and they would wish that before long the main jurisdiction regarding questions of sewage disposal would be in the hands of separate River Boards, who would to a large extent control all matters affecting their watersheds, subject possibly to some higher court of appeal. The conditions obtaining in the watersheds of large manufacturing districts were totally different to those of rural districts, and the question arose whether a stream should be preserved for fish life rather than be used for manufacturing purposes.

Dr. Butler (Medical Officer of Health for Willesden) observed that it was not apparent from Mr. Kaye-Parry's paper what particular modifications he wished with regard to the rivers in Ireland. There was only one way in which the Conference could attack the subject, and this was from the hygienic standpoint. Considerations as to the cost to localities could not enter into the decision of questions of that kind, for they had passed the stage when they could contemplate the pollution of their rivers in the way they had been polluted in the past. Mr. Kaye-Parry laid it down that he did not wish for any pollution of rivers. If no nuisance was created, and no danger brought about, they had obtained all they desired, and the attempt to fix standards for effluents had this object in view. They knew, however, that the removal of solids from the sewage did not attain this object, for under many conditions which obtained in England such sewage did decompose and did create a nuisance. It had been established that mere clarification did not achieve the object of preventing effluent discharged into rivers doing no harm, and consequently he did not

think they should relax regulations to enable this to be done.

Professor E. J. McWeeney said there was a marked difference of opinion. One view was held by the representatives from England, who mostly had to deal with a rapidly-increasing population; while, on the other hand, the representatives of Ireland had to deal with conditions of an opposite character—a dwindling population, and a population also which discharged its sewage in many of their Irish towns not in sewers at all, but into privies. They had in Ireland examples of the precise course of action which Mr. Kaye-Parry had referred to. There was, for instance, the City of Cork, whose water supply was taken from the river into which Macroon twenty miles higher up discharged its sewage. He did not hold that that was a good arrangement; but, as Professor Letts had pointed out, it was the case of having a volume of water enormously exceeding the volume of sewage which was poured into it. There was a full amount of aeration of this water. The volume of water was so much greater than the sewage that a pretty considerable, if not an absolutely perfect, amount of purification took place all the way down. In Limerick they had pretty similar conditions. There was no doubt some typhoid in both of these towns, but it had never attained any very serious proportions. He merely put that forward from the practical standpoint as distinct from the purely bacteriological one. Mr. Kaye-Parry proposed to stop the solid matter from getting into the river, but when once he had fitted up arrangements for the complete removal of the solids he should have thought Mr. Kaye-Parry would have advised the municipality to take the further step of purifying their sewage bacteriologically, because if once they went to the trouble of adopting anything like an efficient mechanical arrangement for the removal of solids they might as well incur the slight additional expense involved in providing contact beds. The final solution of the question, he thought, must depend upon what was going to be the fate of the water below the point of the entry of the sewage. If it was not a potable stream below then the question reduced itself to one of the relative volumes of foul and pure water. On that question of relative volumes would depend the possible destruction of fish and certain æsthetic considerations for the dwellers lower down, especially in the case of a small stream which in the middle of summer had a tendency to dry up, and in the isolated pools of which sewage matter might decompose. There was one particular kind of sewage which he considered ought to be treated very carefully, and this was the sewage from creameries. This was very highly laden with milk and was a very decomposable fluid. He was strongly of opinion that all creameries in Ireland should be compelled to satisfy the Local Government Board of their ability to deal with their own premises, and should not be allowed to pour their sewage into streams.

Mr. P. Fyfe (Glasgow) pointed out that in Glasgow they did not treat their sewage bacteriologically, but by precipitation, and they did it more cheaply than any other town in the United Kingdom. He had written to the engineer for particulars as to cost, who had informed him that whereas they formerly used a chemical costing 33s. 6d. per ton they were now able to manufacture their own precipitative for about 11s. 6d. per ton. He thought that in such cheap treatment Mr. Kaye-Parry would find a solution of his problem.

Dr. Fowler (Manchester) thought they should be quite clear on what Mr. Kaye-Parry really meant. One or two had spoken of secondary decomposition, and they all knew that sewage which had been merely settled, or even sewage which had been treated with chemicals, would, if left to itself, afterwards decompose and cause a nuisance. But the point which Mr. Kaye-Parry wishes to emphasise was whether where the sewage was small in amount and the river water was large nuisance would arise. They would all be agreed that, providing certain conditions were favourable nuisance would not arise, but it was very important that these conditions should be investigated in each case and carefully observed, and that would necessitate some observations of a character perhaps which not every local authority would go in for. In the first place, it would be necessary to know the relation of the volume of sewage to the smallest summer flow of the stream, because it was then that nuisance would arise if it was going to arise at all. Further, it would be necessary that the point of inlet should be very carefully chosen, so that the effluent, whatever that might be, was properly mixed with the river water at once and that the mixture should find a clear way down the stream. That was a point to be very carefully borne in mind. If there were small bays where eddies of imperfectly purified sewage were likely to be formed and the oxidation conditions would be bad, the likelihood would be that if they did not get decomposition they would get growths of sewage fungus. The removal of solids was not such a simple matter as was at first sight supposed. If they retained their solids in the tank they had a certain amount of sludge to deal with, and, of course, all the more if they used chemicals, as had just been suggested. Then the cost of chemical treatment did not end with the mere amount spent in the chemical which was added. They had to pay for the addition and for the labour of adding it, and they also had to deal with large quantities of sludge which was produced thereby. In relation to the solids which had to be dealt with if they had a tank, it seemed to him that the construction and dimensions of the tank would have to be very carefully considered. If they had it too large they had septic action arising and got an effluent which in his opinion was not altogether suitable for discharging into a river. Another point which arose was in reference to storm-water. While they might have a system of sewers which went very well in dry weather and brought everything down to the works, yet in stormy weather they might have difficulties owing to overflows. The difficulties of storm overflows was that they were liable to get permanent deposits, and he would urge on engineers having control of schemes of this sort to see that all the sewage in the works was treated. He had seen a great deal of nuisance and difficulty exist by storm overflows, which completely nullified the good work done by purification works. He would also, in regard to the remarks of Dr. McWeeney, like to point out that bacterial beds in themselves were no safeguard as regarded the bacteriological pollution of a stream. It made little difference whether they had 100,000 bacteria or 1,000,000 if they were still there. They knew that bacterial beds in themselves, although capable of producing an excellent effluent, were not sufficient to remedy any danger which might arise from the presence of bacteria. That, however, was a question which did not arise on the paper, as the presumption was that the water was not to be used for drinking purposes.

Dr. S. Rideal thought the discussion had served the special purpose in drawing attention to the very unsatisfactory condition of the question of standards both in Ireland and England. Previous speakers had referred to different standards which had been suggested and on the work which had been done by the Royal Commission in England on this important matter. They did know now what should be the quality of the effluent discharged to any given place, but they varied from place to place. Unfortunately, they had no control authorities for their different rivers. They would recollect that the Royal Commission suggested in one of their earlier reports the desirability of the formation of river boards to say what should be the standards for different rivers. He believed the Royal Commission had made up their minds not to dissolve and issue a final report until some fresh agitation on this particular subject had been brought about, and he thought they (the Conference) might do something towards furthering Parliamentary action. He thought there was a great deal to be said for a different standard where they had a small town discharging into a large river. In many districts in England they had the converse, and where a river board had been appointed, as was the case with Leeds and Bradford, the advantage obtained in the last ten years had been enormous.

The discussion then concluded.

Climate and Public Health.

On Friday Sir John Moore read a paper on "The Climatology of Ireland in Relation to the Public Health," in the course of which he remarked that the claims of Ireland on those who are in search of health, of rest, of novelty in the midst of beautiful surroundings, are indisputable. No matter in what direction the traveller wends his way through the Emerald Isle, he will find much to interest and instruct, to charm and delight. Apart from the scenery which bewitches by its infinite variety, Ireland presents an unrivalled field for archæological, legendary, historical, botanical, and geological research. Its mountain masses, standing like sentinels along its storm-wept coasts, while they do not tower above the snow-line like the mighty Alps, have a grandeur which is all their own. The stupendous cliffs of the western shores, the fiords of Kerry and of Donegal, the towering basaltic headlands of Antrim, the sandy or shingly beaches of the eastern coast, and the land-locked bays of the south, present a never-ending kaleidoscope of scenic beauty.

Disinfection.

Dr. S. Rideal, in an interesting paper, discussed the question of "Disinfection from a Medical, Chemical, and Bacteriological Standpoint," in the course of which he strongly urged the standardising of disinfectants.

Considerable discussion followed, in which several speakers voiced the opinion that the use of disinfectants were often harmful, inasmuch as such use created a sense of false security. They urged that the removal of the cause of nuisance was the plan to adopt.

At the conclusion of the business, votes of thanks were passed to the various bodies and individuals entertaining the delegates, and it was decided to accept an invitation to meet next year in Cardiff.

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THE following is the continuation of our report of the annual meeting of the Municipal and County Engineers, which was held at Liverpool, under the presidency of Mr. J. A. Brodie :—

Planning of Towns and Road Maintenance.

On resuming the discussion on planning of towns,

The President pointed out the great possibility they had to face in planning the future development of towns. Anyone who had had the pleasure of looking over the plans prepared under Sir Christopher Wren 250 years ago for the rebuilding of the City of London would realise what a glorious city London would have been if his master mind had had his way then, and how they would have had a city which would have been unequalled for beauty and grandeur as it was unequalled for size at a cost much less than had been expended for those improvements now in force. He thought a scheme should be thought out in every town which would stop the partial and selfish development, which was only done to fill the pockets of the landowners.

Mr. E. Pickmore (Town Clerk of Liverpool) said the Municipal Corporations Association had taken the matter up very warmly, and in the question of town planning formed a sub-committee, of which he had the honour of being a member, and of which Mr. Nettlefold was chairman. After a very great number of meetings of that sub-committee and a great deal of information obtained upon the subject, they ultimately came to the conclusion that it was scarcely possible to expect to get a measure through Parliament which would authorise town councils to lay out the property or land of other people. The difficulty which surrounded the subject was that they could scarcely expect that they would be enabled to tell the property owner how he could best lay out his land and make him lay it out in such a way as the corporation thought he ought to do. Possibly it would be necessary to get an Act of Parliament, and, in fact, they drafted a scheme for an Act, which he would be pleased if engineers would see, and which no doubt they would ultimately see through the Association circular. The idea formulated was that all owners should be compelled to submit their full plans of the estates which they proposed to lay out, showing all the roads and the widths of roads, besides how it was proposed to build the houses. The idea was that the plans after being submitted to the authority should be fully considered by the authority, who would have power to require that the roads shown on those plans should be made of the width and the material and in the direction which the authority would ultimately decide was

the proper material, direction, and width. It was thought that by that means the local authority would be able to get their property owners to a proper method of laying out their estates. Then a question to be raised was the number of houses in the area. It was thought also that that might be obtained in a similar manner by requiring that only a certain number of houses should be permitted upon the land, and by having very stringent by-laws that there should be proper air spaces both back and front of the houses, a matter the Corporation of Liverpool was now taking up. Other subjects—the question of taking land from property owners which was required for open spaces and the width of streets—were also carefully considered. If the local authority had power to require the property owners to make the width of streets such as the local authority laid down that would get over the difficulty of having to acquire land or pay compensation to owners for land thrown into the streets. It was not quite agreed that the width of the street should be laid down to the absolute requirement of the local authority without compensation. That was the form in which the Act had been drafted, although it was not agreed in the Association. It was thought that that was rather too drastic a proposition, but he might say there were two or three towns in England which had those powers, and, as they exercised them with all due care and consideration for the owners, there did not seem any reason why they should not ask for them, although they might not get it from Parliament now. His personal feeling was that they must not ask for too much. If they asked for too much they would get the Bill thrown out altogether. His opinion was that they could not expect that local authorities should have power to say how wide and of what materials a street should consist of, and what the terms of compensation should be on that particular estate. If they were beginning afresh in England to make new towns, such as the Garden City, there was no doubt about it that the local authorities should have the full power, and they should not have towns laid out as they were now.

Mr. W. B. Purser (Kesteven County Council) said after hearing the speech of Mr. Hooley it seemed to him that they were treating the opinions of others—who had with them the object of improving the roads—with scant courtesy. He referred to the Roads Improvement Association more especially. He observed that upon the Council they had a delegate of that assembly, and he thought they might give him a little guidance as to the procedure he should take with reference to that organisation. He believed if they devoted their attention to get their Association into sympathy with them, instead of treating their operations with a certain amount of want of respect, they would be doing a great deal of good to the country and to the Association. He ventured to think the dust trials of the Association would not have taken place without the help of the Roads Improvement Association. Their Association was not in a position to undertake costly experiments at its own expense, and therefore he thought they should welcome any help they could get from outside associations who had the same object in mind, viz., the excellence of the roads.

Mr. J. H. Norris (Godalming) thought the necessity for some legislation to enable local authorities to deal with the laying out of building estates was quite as necessary for a small town as a big one. He believed there would be very few officials of corporations present who had not had experience of the laying out of estates by private owners, certainly as an exhibition of the way how not to do it. In his own town they had had a great many building estates laid out, none of them working in one with the other, and a great deal of public inconvenience was the result. The only advantage that accrued was advantage to the property owner, who made as much as possible out of speculation in developing his land. The County Surveyor of Middlesex had told them how Middlesex was developing into one great town. The same thing was happening on the other side of the Thames in Surrey. A good deal would have to be spent, but things could be made a good deal more satisfactory if legislation were in force enabling it to be done.

Mr. Smith (Kettering) remarked that there was another important point with tar-macadam in the town street—that of slipperiness. He had been making it for fourteen years, and, with regard to the material, he had always considered slag, if well selected, gave very good results. At the same time, if they got bad slag they were liable to failure.

Mr. A. Gladwell (Eton) said, with regard to the question of the development of towns and town planning, he agreed that some larger powers were required to enable local authorities to satisfactorily deal with the question. He did not think there was much danger of this or any other Government giving them too many powers, so he advised them to ask for as much as possible. They would never get as much power for the development of building estates and the development and extension of towns as they had in Germany; but they might obtain by hard pegging away at the subject something far more satisfactory than they had at present. The local authorities were to-day virtually helpless with respect to this great question, and he hoped they would meet with every success.

Mr. J. S. Brodie (Blackpool) said he had made tar-macadam roads for the last twenty years, and, perhaps, having such a long experience, he was a little prejudiced in their favour. He must say of the tar-macadam roads he had made twenty years ago he made very successful roads from slag. One had successes and failures. He would not say all his roads had given him satisfaction, but the cause had generally been careless workmen or defective material or something quite apart from the principle of mixing slag or limestone with tar for securing a good impervious road. During the last four or five years they had at Blackpool adopted a policy with regard to their roads—a policy which involved doing away with all ordinary macadam roads and going steadily in for impervious roadways. The question of planning suburbs was one in which he was very much interested. At Blackpool they had a large number of small freeholders, whose sole idea was to put as much property as they could on an acre—he was almost going to say on a square inch. The idea was not to provide means of communication, but to cram property into the smallest possible area, and they as a municipality were practically helpless in the matter. He had the pleasure some months ago of attending a meeting of the Municipal Corporations Association, at which Mr. Nettlefold laid down his views on the matter. He entirely agreed with the views he expressed. It seemed to him that to lay out roads and streets in the way in which they were laid out was to lay up a heritage of insanitation in the future which was nothing short of madness. They were all met with the cry that they were coming to be Socialists, and that they were going to take a man's property from him, and that he was not going to have any say whatever in its development. Nothing of the sort. He thought any owner of property who really studied the matter would agree that they were better able to lay out an estate as a whole with main roads and communications than any mere layman could do. He thought if they pursued that policy of the higher socialism, so to speak, the policy of sane municipalisation and matters of that kind, obtaining for the greatest number of people the best advantages they could, their successors would thank them for the efforts they had made in their behalf. (Cheers.)

Mr. A. E. White (Hull) said from the information given by the Town Clerk of Liverpool the proposals of the Association of Municipal Corporations were intended to deal only with the laying out of individual estates and contained provisions with reference to the width of streets, the materials for the construction of streets, and the purchase of open spaces contiguous to the streets intended to be laid out, but they did not contain any provisions whatever with respect to the planning in advance of development schemes for the suburbs of our great cities.

Mr. W. Nisbet Blair (St. Pancras) said from what had been said on the subject of tar-macadam it would be a conclusion in the minds of most of them that the material was one which might be relied upon as securing not only a durable surface, but a surface free from dust, and requiring little attention in the way of water, one which would allow the traffic on the roads, largely of an automobile character, to continue on its way without creating the nuisances which they had had in the past. While it might be in the power of large councils and corporations to substitute tar-macadam for ordinary macadam without any undue burden upon their rates, it was not in the power of many smaller and lower-rated authorities to make such substitution in anything like a wholesale scale. It behoved them therefore to consider means towards the end Having been present a few weeks ago at a Conference at the Institution of Civil Engineers, between road-users and road-makers, they arrived there at pretty well a unanimous consensus of opinion that there should be a contribution from the Imperial funds towards the purposes of which they were speaking. That was accepted by road-users just as cheerfully as by road-makers, and it only became a question how the Imperial fund should be provided. He thought there were no owners of automobile vehicles who would not be quite prepared to pay their quota towards the cost. He thought they ought to recognise with satisfaction and gratification the attitude of the Road Improvement Association, who were seeking and striving to get that which they were discussing—dustless impervious roads of good surface and durability. They should not consider themselves as in hostility to them, and it would be well if they could get an expression of opinion from that meeting agreeing with the conclusions reached by that Conference on the question of Imperial grants, to show that they were all acting towards one end.

Mr. A. T. Davis (County Surveyor of Shropshire) thought it would be a pity to let that meeting disperse, seeing that they had a number of delegates there from local authorities, without passing a resolution urging the State to come to the aid of the road authorities and help them to bear the additional burden that had been brought about by and through self-propelled traffic. Everyone would agree there was additional wear and tear of their roads, and the additional cost brought about by that should not fall upon the localities, but should be borne by the State. He moved:—"That in view of the great increase of self-propelled traffic the State be urgently requested to make special grants to highway authorities towards the additional cost of road maintenance."

Mr. W. H. Leete (Bedfordshire) seconded the proposition.

Mr. J. T. Eayrs (Birmingham) said with regard to the question of town planning they had all been very much interested in the remarks made by the Town Clerk of Liverpool as to the scope of the proposed Bill to be brought before Parliament for this purpose. He quite agreed with the remarks of one or two other members when they said they did not think this proposed Bill would go far enough. The whole question of town planning to his mind depended upon the full development of the district and the question being dealt with in a broad and comprehensive manner and not in the limited way in which it was proposed to be dealt with by the Bill of the municipal corporations.

Mr. T. L. Dodds (Mayor of Birkenhead) said that in his humble judgment local authorities did not possess sufficient powers in regard to the planning of their towns. Quite lately he had had the privilege of studying somewhat briefly the municipalities of four German towns, and one of the circumstances which impressed itself most strongly on his mind was the far larger powers possessed by German municipalities than any that they had in their possession with absolute freedom to take land and make equitable arrangements with the owners, who were men whose minds were open to equitable conditions. He was told that no difficulties of any kind had ever arisen in regard to the enlargement and improvement of main thoroughfares. That was a condition of things which ought to extend to this country. He agreed with the contention that local authorities ought to be vested with greater powers than they possessed at the present time. Frontagers did invariably get considerable advantage to their property from such improvements as were carried out by the local authority, and in one direction he thought there ought to be immediate legislation in regard to the control of outlying districts which were likely to be brought into the area of borough boundaries. At the present time these out districts had absolute power to develop the districts without any reference to the immediate or

prospective requirements of the towns in which they would be included. This was a condition of things which should not exist, because in all their districts they found buildings going up which were not in accordance with the by-laws of the adjacent towns, and roads were constructed which were too narrow for their prospective use. Then there was absolute need for greater powers of supervision over buildings. Of course, the present powers with regard to sewerage were adequate, and it might be taken that no new town could be constructed or planned without adequate supervision and an adequate system of sewerage. He thought that power should be extended to buildings. Plumbing, and other things ought to be brought under supervision with the cost imposed upon the property owner. No charge he would be called upon to pay would prove more remunerative than the fact that the whole of the building had been subjected to the direct supervision of the local authority. Another point he would emphasise now was the absolute need, now that main thoroughfares were so largely used by motors, for wider back streets or passages.

Mr. E. G. Mawbey (Leicester), in reply, said he happened to have been behind the scenes as to what the Municipal Corporations Association had been doing, because the Town Clerk of Leicester had been associated with that Committee. They had printed a draft of their powers with regard to town planning and building areas, and sent them out. He tried, having the draft scheme of the Municipal Corporations Association before him, to draft the resolution so that it would not be antagonistic to them, but would strengthen their hands and support them. If this were passed, it would be submitted to the Council, who would draft a memorial to the Local Government Board, and they no doubt would take the matter up.

Mr. Mawbey's resolution was then submitted and unanimously adopted.

Mr. A. T. Davis (Shropshire) then proposed his resolution:—"That, in view of the great increase of self-propelled through traffic, the State be urgently requested to make special grants to highway authorities towards the additional cost of road maintenance." It was obvious, he said, to everyone that the cost of even tar-painting, which had been mentioned at about 1d. per yard, would, in some instances, mean doubling the cost of maintenance of district roads. The State, he thought, should come to their aid.

Mr. Leete (Bedfordshire) formally seconded.

Mr. J. P. Norrington (London) did not think Mr. Davis's resolution should be passed that day. It meant that towns that paid now something like 500*l.* to 1,000*l.* per mile should contribute to the cost of the roads in the country. (No.) That was so, because when the State gave aid to certain purposes, that money came out of the pockets of the ratepayers generally throughout the country. He could not see that there was any special reason why men in the country should not bear their proportion of the cost of making and maintaining the roads, in the same way as people in towns bears their proportion of the cost of the maintenance of their roads.

Mr. J. P. Barber (Islington) said, to his mind, the objection was not worth a moment's consideration.

The President suggested that the resolution be altered so as to read that the Council be empowered to prepare and present a memorial so that it should not go direct from the meeting.

Mr. Davis agreed to this course.

The resolution was then amended as follows, "That the Council be empowered to prepare and present to the President of the Local Government Board a memorial urging the Government to make special grants to highway authorities towards the additional cost of road maintenance brought about by the great increase in self-propelled through traffic," and carried unanimously.

Liverpool.

Mr. E. R. Pickmere, M.A., J.P., Town Clerk, read a paper on "Liverpool." The commercial prosperity of Liverpool, he said, was no doubt largely due to the natural advantages derived from its position upon the banks of the River Mersey; but, notwithstanding these advantages, its prosperity could not have been fully secured unless it had been able to call to its assistance from first to last eminent and practical engineers, whose skill and ingenuity had made it possible for the port to be developed to its fullest extent. The River Mersey was, in the XVIIth century, an apparently insignificant stream, both as regarded its length and the volume of water which it carried to the sea. The Irwell and the Weaver, tributaries of the Mersey, were not navigable until the end of the XVIIth century, so that Liverpool in the early period of its existence possessed none of those advantages of water communication with the interior, from which London, Bristol, Lynn, and Hull derived so much of their early wealth. The numerous and extensive water communications with the interior, which Liverpool now possessed, were entirely the result of art and labour, and were of modern and artificial formation. Having traced the development of the Liverpool docks and shipping trade, he said the tonnage of vessels entering the port in 1906 amounted to 16,147,856 tons, while the income from rates and dues had increased to 1,305,509*l.* Nor had municipal Liverpool failed to advance with the times, for within a comparatively short period it had been transformed from a small town of 1,858 acres, with a few streets, a few houses and mills, and a population of 5,700, to a city of 16,619 acres, a population of 739,180, streets representing a mileage of 495 miles, and a ratable value of 4,658,306*l.* It now possessed some of the finest buildings in the country, public institutions to meet the requirements of both rich and poor, and a municipal administration of which the city might be justly proud. Its tramways, with a mileage of 104 miles, were worked by the Corporation, and carried annually no fewer than 122,094,528 passengers, while the electrical undertaking, which was also in the hands of the Corporation, was in a flourishing condition, and a valuable asset to the city's finances. Its baths, free libraries, reading-rooms, art gallery, museum, and parks were the envy of many towns; while, in the matter of the housing of the poor, Liverpool certainly stood in the forefront, and its water supply was admittedly one of the finest in the kingdom, the daily supply representing about 30,000,000 gallons. Liverpool was created a city in 1880 by a charter of Queen Victoria, and in 1893 the title of "Lord Mayor" was granted by letters patent to the chief magistrate for the time being. In 1904 the University College obtained from the Crown its charter as a fully-organised and independent university. A cathedral worthy of the city's importance was now in course of erection, to take the place of the pro-Cathedral of St. Peter, one of Liverpool's oldest churches, which was rapidly falling into a state of decay. Liverpool's architecture had been further beautified by the new and handsome offices of the Mersey Docks and Harbour Board, erected on the site of the old George's Dock, which, with other buildings about to be erected there, would present to incoming vessels one of the finest approaches in the world.

Mr. Platt (Rochdale) said he had pleasure in moving that their hearty thanks be given to Mr. Pickmere for the interesting sketch he had given them.

Mr. W. Nisbet Blair (St. Pancras) seconded the vote of thanks. It was very gratifying to find officials working together as they were in Liverpool. He should like to know what connexion there was between the Dock Board and the Corporation.

The vote of thanks was unanimously accorded.

Mr. Pickmere said there was no direct connexion now. It was severed some years ago, and had never been renewed. It had been mooted, and there was an annual motion on the Council summons that something should be done towards obtaining actual representation, but nothing had so far been done.

(Our report will be continued next week.)

PUBLIC ELEMENTARY SCHOOL, MAIDSTONE.—The foundation-stone of the first Council school to be erected in this town was laid on the 26th ult. Mr. T. F. Bunting, Borough Surveyor, is responsible for the plans, and Mr. W. T. Burrows, builder, is carrying out the work.

METROPOLITAN WATER BOARD (CHARGES) BILL.

AMENDMENTS to the Metropolitan Water Board (Charges) Bill continue to be notified, and they now cover eight pages of the order paper. Sir William Bull (Hammersmith), who is one of the "backers" of the Bill, has given notice that he will move a new clause providing that if the revenue exceed the expenditure of the Board in any year, one-fourth of the excess shall, notwithstanding anything contained in the Act of 1902, be carried to a separate account in the books and earmarked as applicable to the reduction of the charges for the time being made by the Board for supply of water by measure. All monies so earmarked shall be accumulated until they amount to not less than 2*l.* 10s. per cent. upon the amount for one year of the charges to reduction of which they are applicable, and they shall then be applied and distributed by way of a special discount or rebate upon such charges at a rate of not less than 2*l.* 10s. per cent. per annum.

Sir William Bull has also given notice that he will move the deletion of clause 32 of the Bill which provides that notwithstanding anything in the Bill or any agreement made thereunder the Board shall not be required to afford a supply of water for other than domestic purposes if and so long as any such supply would interfere with the sufficiency of the water required to be supplied for domestic purposes.

Notice has also been given by Sir William Bull that he will move to have a sliding-scale for domestic supply charges inserted in the Bill. He proposes that the charges should be 5 per cent. on premises of 30*l.* ratable value, 6 per cent. on premises exceeding 30*l.*, but not exceeding 50*l.*; 5½ per cent. from 50*l.* to 200*l.*; 4½ per cent. from 200*l.* to 300*l.*; 4 per cent. from 300*l.* to 1,000*l.*; and 3½ per cent. above 1,000*l.*

THE ARCHITECTURAL ASSOCIATION SUMMER VISITS:

V.—BIRMINGHAM AND DISTRICT.

THE annual week-end visit took place on June 29 and 30, when a representative party of the Architectural Association made the journey to Birmingham. The inclement weather robbed the occasion of that element which alone remained to make the excursion a complete success; as a result the interesting programme had to be curtailed.

An early start was made on the morning of the 29th ult. at the new buildings of the Birmingham University, the work of Sir Aston Webb and Mr. Ingress Bell. The design is perhaps familiar with our readers, for we published plans and other drawings in our issue of May 3, 1902. The work is of considerable interest, and is now nearing completion. The remainder of the morning was spent in visiting two important houses—"Winterbourne," the work of Mr. Ball, President of the Birmingham Architectural Association, and "Garth House," a very attractive design by Mr. Bidlake.

Many buildings in the city claimed the attention of the visitors, notably a warehouse by Mr. Bateman and the Dental Hospital by the same architect. A warehouse in Great Charles-street, by Mr. Bidlake; Guild of Crafts premises, by Mr. A. S. Dixon; Eagle Insurance offices, by Professor Lethaby; the Alliance Insurance building, by Mr. Goddard, etc.

A comprehensive article with illustrations of Birmingham architecture appeared in our issue of November 27, 1897.

The afternoon was entirely devoted to Aston Hall, one of the most famous Elizabethan houses in the kingdom. We have at various times illustrated and described the work, whereof the exterior and interior alike are of exceptional interest to students of XVIIth century English architecture, and which is, fortunately, in a fine state of preservation. The overcast sky and subsequent thunderstorm quite prevented a critical inspection of this unique building—the chief item on the programme.

The social event of the tour took place in the evening, when the excursionists were entertained to supper at the Midland Hotel by the Birmingham Architectural Association, under the chairmanship of the President. The sentiments of the London Architectural Association were voiced by Mr.

Arthur Keen, to which Mr. Bateman responded. An entertainment followed.

The following day was spent in visiting various old buildings in the neighbourhood of Birmingham. A brief halt was made at Castle Bromwich Hall, a fine house set in very attractive gardens. The church, adjoining, also claimed attention, and after passing some good modern houses and Coleshill Church, the journey was continued to Maxtoke Priory, the ruined gatehouse of which indicates the former existence of a large monastic building.

Maxtoke Castle, the chief item on the day's programme, excited the general admiration of the party. It is a good specimen of a late XIVth century fortified house. The gatehouse is one of the finest of its kind in England, and is rendered the more interesting by the groined entrance and its proximity to the moat and bridge.

A tower stands at each of the four corners of the plan, and within the outer walls is a spacious quadrangle. Unfortunately, some very unsympathetic hands have been at work in restorations. Much remains to show that the original dwelling was chiefly a half-timber building; a good deal of it has been destroyed by fire. The hall is on the first floor level, and has rooms under it, one of which is vaulted. The chapel, which formerly extended to the full height of the roof, has been divided by a modern floor to increase the accommodation of the castle, but the first conditions are clearly traceable. The west window is an excellent late "Decorated" feature. The panelling of the drawing-room is refined in character, although a coarseness is seen in the general finish of work.

A recurrence of a thunderstorm prevented further sight-seeing, and a hasty return was made to headquarters.

Fifty Years Ago.

FROM THE *Builder* OF JULY 11, 1857.

THE ARCHITECTURAL MUSEUM, IN THE GOVERNMENT MUSEUM AT BROMPTON.

AS OUR readers already know, the Architectural Museum has been removed from the quaint dirty hole in Cannon-row, Westminster, where it was first planted and grew. The old place had a charm of its own, and the new place is less convenient to some who used to frequent it. We are quite satisfied, however, that the committee did right to accept the offer when the Government proposed to provide the Institution with premises rent free, as it does the Royal, the Antiquarian, and other societies. The difficulty found in raising sufficient money to meet the annual expenses and pay off the debt incurred on its first establishment; the failure of room; the coldness of the place in winter, which made study impossible; and the want of a good access to the collection, all weighed with the committee, and could lead to no other decision than that they came to. In its new home the collection is better seen, can be studied during the whole year, and, through its connexion with other collections, will be visited by a much larger number of persons than hitherto. The Institution retains its independent position as a private society, with all the original powers of direction and management, and with entire dependence, as before, upon the exertions of the committee, and the contributions of subscribers.

The original intention of the founders was to form a nucleus of a National Museum of Architectural Art, "to supply that great and increasing want, now felt by the public, architects, artists, and art-workmen, of the means of referring to and studying the architectural art of past ages, and of those arts which have had their origin in architectural art." A large and increasing collection of casts and specimens has been already formed from the finest ancient examples, English and foreign, of complete architectural works, arranged, as far as possible, in the order of their date; and of details, comprehending figures, animals, and foliage; mouldings, encaustic tiles, mural paintings, roof ornaments, rubbings of sepulchral brasses, stained-glass, impressions from seals, and of all other objects of fine art connected with architecture; and it seems to us that Government should now take charge of the Institution, obtaining annually a grant for its increase and maintenance, and appointing the committee as a board of trustees for its management, with power to fill up vacancies. The Greek, Roman, and Renaissance casts belonging to the Department should be added to the collection and arranged in sequence.

The Museum is an admirable school for study. Every architect and every architectural carver, should send his pupils there regularly to draw.

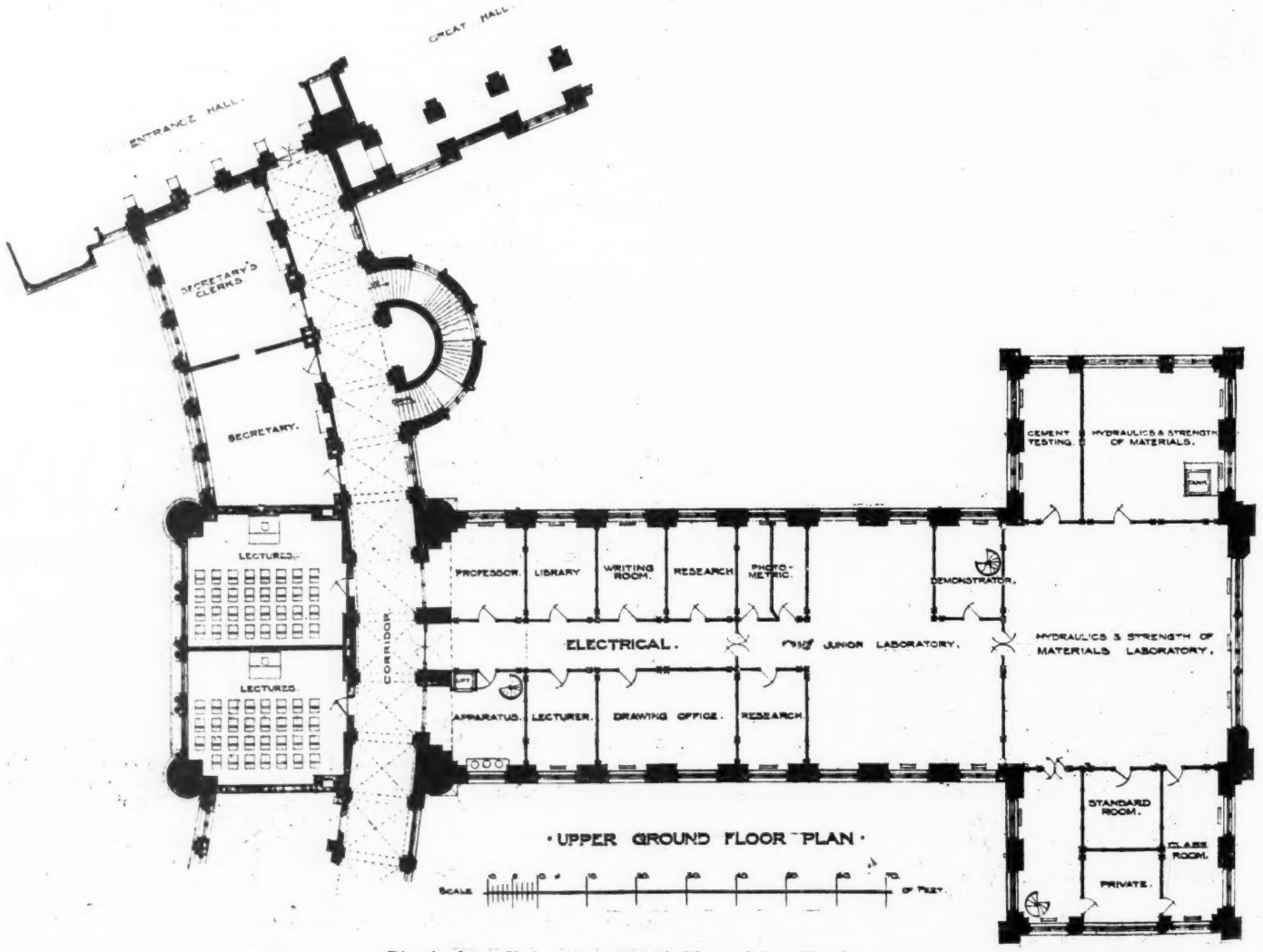
*** This appears to have been the second stage in the existence of the Architectural Museum. Opposite the description was a page engraving of the long room under the roof of the Brompton Gallery in which the casts were arranged; apparently a much better and more commodious place for the exhibition and study of the casts than the subsequent quarters at Tufton-street.—ED.

Illustrations.

BIRMINGHAM UNIVERSITY.

THE Birmingham University buildings, of which the principal elevation is illustrated, are situated at Bournbrook, on the Edgbaston side of Birmingham, and about two miles from the centre of the city. The site is 25 acres in extent. It is bounded on the north by a new road, of which a length of 500 ft. is level, and which falls away gently towards the east and rapidly towards the west. From this level centre a plateau, roughly semicircular in outline, juts out southward, and from the edge of this plateau the ground falls steeply on the west, south, and south-east side. It was this peculiarity in the configuration of the site which suggested the arrangement of the buildings, which have a frontage of over 900 ft. to the University-road, and are carried in two series round the edge of the semicircular plateau.

In the centre of the southern semicircular range is placed the principal entrance leading into the great hall, which is to be used for examination purposes and for degree giving and for other gatherings. At the south end



Birmingham University: Detail Plan of One Pavilion.

there is placed a raised platform, and behind it retiring and other rooms, whilst on either side is the half of a great organ. Beneath the hall the dining-rooms, students' common-rooms, and professors' combination-rooms are placed, and in a lower floor the kitchens and allied offices. Right and left of the great hall the workshop blocks radiate their axes drawn to the centre of the semicircle. Of the six blocks shown on the plan, three are completed and have been for a year in occupation. The completed blocks are devoted to engineering; electrical science, hydraulics, strength of materials, mineralogy, and mining, and they are provided with drawing offices, libraries, and museums. They have complete equipments for the several subjects, and have their full complement of pupils at work.

Along the inner semicircular belt of building are accommodated the lecture-theatre, lecture and preparation rooms, research-rooms, drawing offices, the vice-principal's private room, the secretary's department, and waiting-rooms, etc. At the eastern extremity of the main road frontage are placed the laboratories, workshops, lecture-theatre, etc., for the department of physics, and similar accommodation for the chemistry department at the western end of the range.

The main entrance from the University-road is through a five-arched loggia in the centre of the buildings. Over it and on each side thereof are the library and librarian's rooms, book stores, etc. In the centre of the semicircular court is placed the tower, which is 325 ft. high from ground to summit. It is open on the ground stage, and has offices on the floor over the entrance. Upwards for about 100 ft. provision is made for various tests of the tenuity of metals and similar experiments. In the upper stages a clock and bells, the gift of the general contractor, are to be placed. In the south-east angle of the site a model coal-mine has been constructed a few feet below the surface, with descending shafts and fan ventilation complete. In the south-west angle on the low ground the power-station is placed. Here are the boilers, engines, Mond gas producers, foundry, smithy, steel-melting sheds, casting shops, etc., and from this centre is provided the light and power for the whole establishment.

The buildings are constructed of Midland bricks with thin Accrington brick facings and Darby Dale stone dressings. The floors are fireproof throughout, and are composed of rolled-steel joists and coke breeze concrete, and are covered with wood blocks. The flats and gutters are of asphalt, and the sloping roofs are covered with Tilberthwayte slates. The domes and twists are covered with lead. When the works shall have progressed sufficiently, the ground round the buildings will be laid out and planted and recreation grounds formed.

The site was the gift of Lord Calthorpe, and the organ in the great hall and the library are both the gift of one family, whilst another donor has recently offered to fill the end window of the great hall with stained-glass.

Mr. Thomas Rowbotham, of Birmingham, is the general contractor for the whole of the works, with the exception of the tower, which is being built by the Waring-White Company. The Bromsgrove Guild have carried out the semicircular ceiling of the great hall, and also some of the metal-work in railings, etc. Messrs. Hope & Son have supplied the casements, and Messrs. Archibald Smith & Co. the ironmongery. Messrs. Lea & Son have been the consulting electricians, and Messrs. Clements, Jeakes, & Co. have carried out the heating and ventilating arrangements. Mr. Pegram, R.A., is the sculptor of the nine life-size figures of Shakespeare, Plato, Virgil, Beethoven, Michelangelo, Faraday, Watt, Darwin, and Priestley over the main doorway to entrance-hall, and Mr. W. S. Frith has carried out all the heraldic and other ornament. The marble work in pavements and columns is by Messrs. Henry Lee & Co. Mr. Henry Gray is the clerk of works.

Sir Aston Webb, R.A., and Mr. E. Ingress Bell are joint architects.

OLIVER BORTHWICK MEMORIAL *MORNING POST* EMBANKMENT HOME.

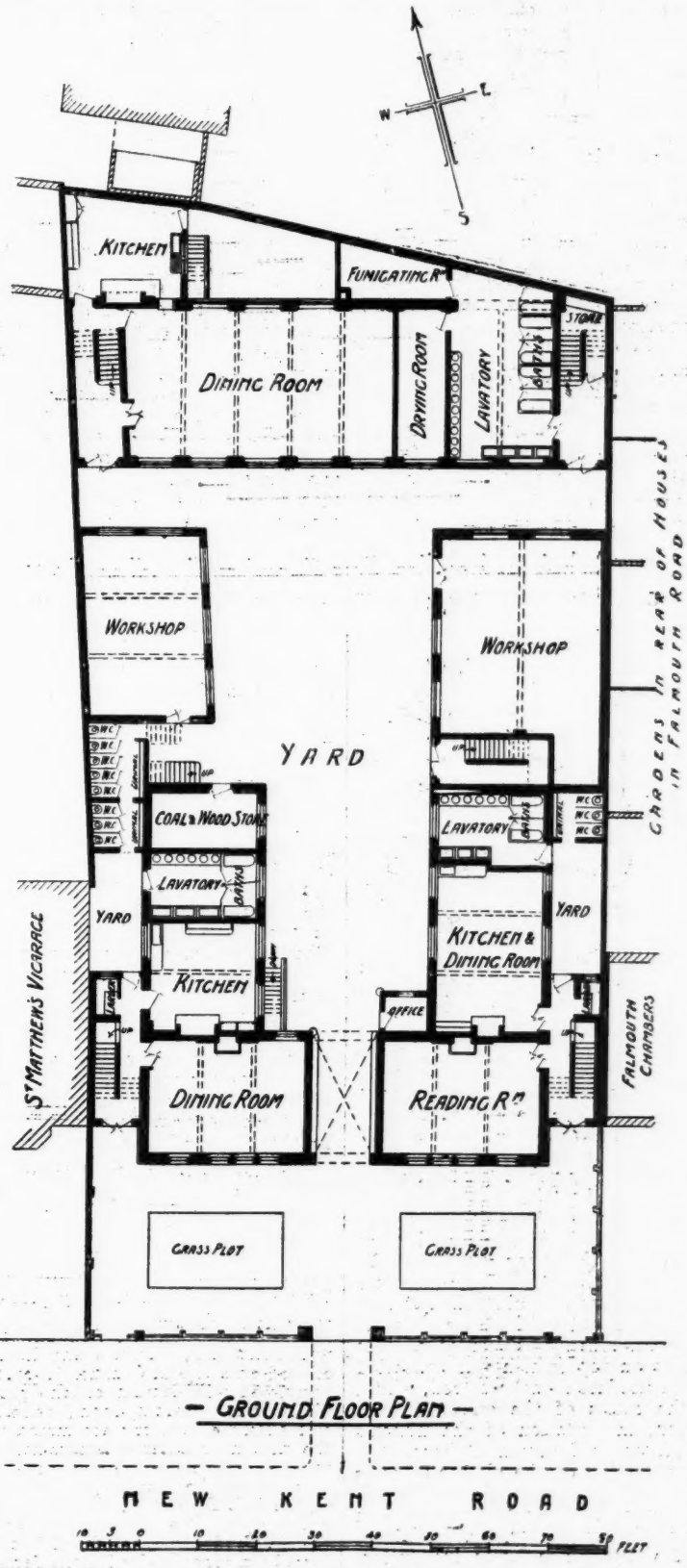
THESE buildings have been erected by subscriptions from the readers of the *Morning Post*, as a home for the destitute men to be found on the Thames-embankment, in whose relief the late Hon. Oliver Borthwick took a very great interest.

The home is situated in the New Kent-road, near to the Elephant and Castle, and has a frontage to the road of about 87 ft., and a total depth of about 186 ft. The scheme comprises a four-story front block with side wings, two workshops (one containing three floors and the other two floors), and a large four-story building in the rear, the whole grouped round a large central yard, with small yards to each wing for lighting purposes.

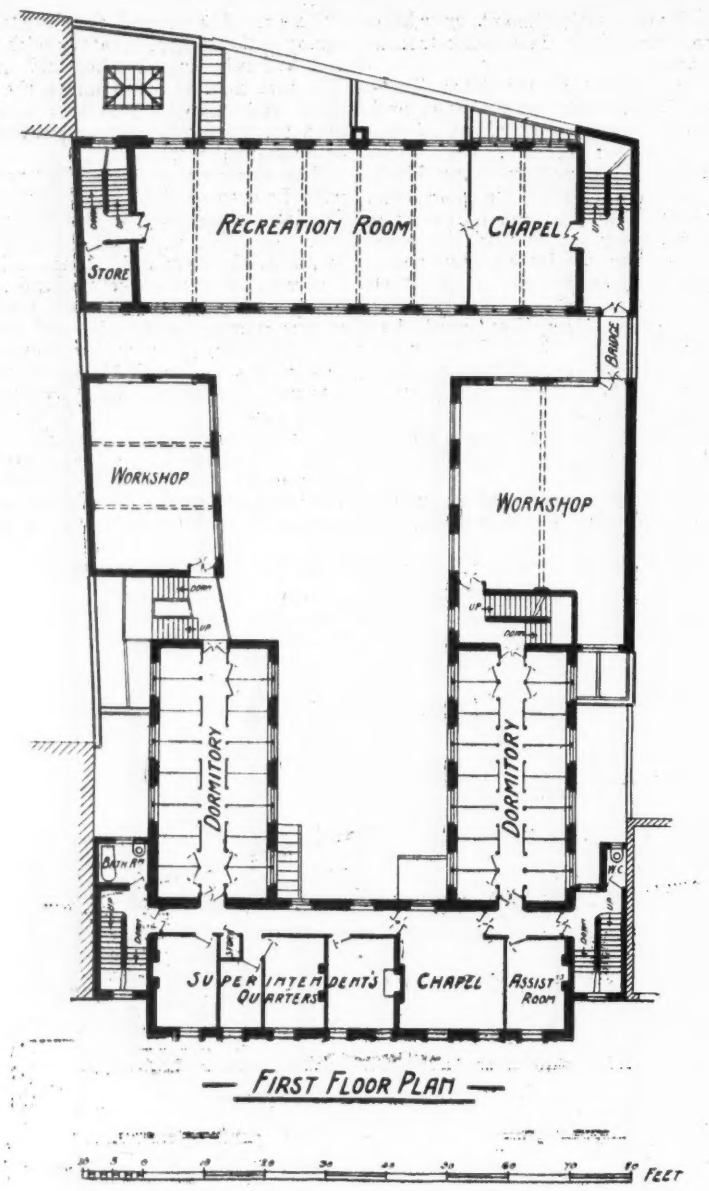
The block facing New Kent-road has accommodation for 103 labour home men, with quarters for the superintendent and office, and with kitchen, dining and recreation rooms, lavatories, etc., on the ground floor. The whole of the dormitories are on the upper floors, each man being provided with a cubicle to himself.

The building in the rear is set apart for casuals, and has sleeping accommodation for 100 men. The ground floor contains a large dining-hall, kitchen, lavatory with baths, etc., and a fumigating-chamber and drying-room. The first floor is given up to the recreation-room and chapel. The two workshops are used for wood-chopping, cabinet-making, and other manual work.

The elevation to New Kent-road is faced with Lawrence's dark cherry-red bricks, with Portland stone cornice and dressings to the windows. The whole of the ground story is faced with Portland stone. The roof is covered with green Westmorland slates. The whole of the floors and roofs throughout are of fire-resisting materials, and special attention has been given to the means of exit in case of fire from each block, in every case an alternative staircase being provided. With the exception of the roof to the front block and the workshops, the whole of the buildings are covered with asphalt flats with staircases up to same. The whole of the buildings are warmed by low-pressure steam, and are lighted throughout by gas.



Oliver Borthwick Memorial "Morning Post" Embankment Home.



— FIRST FLOOR PLAN —

Oliver Borthwick Memorial "Morning Post" Embankment Home.

The buildings have been erected, at a cost of about 16,000*l.*, by Mr. T. G. Sharpington, of Nunhead, from the designs and under the superintendence of the architect, Mr. George A. Lansdown, of London.

PROSCENIUM OF GREEK THEATRE, UNIVERSITY COLLEGE.

THE Medea of Euripides was performed in the theatre of University College, Gower-street, on June 13, 14, and 15, under the direction of Professor Ernest Gardner. The proscenium was designed by Professor F. M. Simpson. The front was durescoed white, the recess green, and the doors red and gold; the curtains to the side entrances being also red, with pattern in gold. Care was taken to follow precedent, as far as possible, in the colouring of the details. The triglyphs, metopes, and bands above the guttæ under the triglyphs were blue; the soffit of the cornice, the fillets of cornice and architrave, the fret pattern on the abaci of the capitals, the annulets and the sinkings between the capitals and shafts, and the guttæ on the architrave were red. The guttæ of the metopes were white; as, although blue might have been more correct, it was found when painted that colour that they did not show. The stencil patterns on the upper members of the cornice were red and blue, the antefixæ being also picked out with these colours, which were counterchanged alternately. The winged chariot on top (which was concealed by gauze until the last scene) was red, white, and gold, the scales of the serpents being red and green, in imitation of the Triton's tail in the Acropolis Museum, Athens.

With the exception of the plaster columns and antefixæ, which were made by Messrs. Daymond & Sons, all the work was done in the College workshop, under Mr. Willstead, the clerk of works. The Latin inscription, which is the College motto, is part of the permanent decoration of the theatre done three years ago. F. M. SIMPSON.

THE SCHILLER THEATRE, CHARLOTTENBURG, BERLIN.

THE illustrations here given of the Schiller Theatre at Charlottenburg are reproduced from a portion of the illustrations of the building given a few weeks ago in the *Berliner Architektur-welt*.

The scheme is a rather striking one, which should be of interest to theatre architects and to the promoters of theatres in England. The large space in the plan devoted to approaches and lobbies, the easy and ample means of egress, and the large space of ground in front of the theatre, are all points worth attention.

The arrangement of the auditorium, with the unbroken slope of the stalls, and the row of pilasters on each side leading up to the proscenium opening, was no doubt suggested by the Wagner Theatre at Bayreuth.

MM. Heilmann & Littmann are the architects.

ERRATUM.—In the sheet of illustrations: "Old Buildings in the Neighbourhood of the East Strand," p. 19 *ante*, the title "The Hall, New Inn," was inadvertently printed for "The Hall, Clement's Inn."

INSTITUTE PREMISES, ABERBARGOED.—A new workmen's hall, institute and library is being erected on a site in Commercial-road, and when completed will contain on the ground floor a billiard-room, reading-room, refreshment-room, and excellent lavatory accommodation, and on the first floor a large lecture-hall 58 ft. long, together with magazine and games rooms. The exterior will be faced with dressed local stone to the first floor level, and above covered with rough cast. The contract has been entrusted to Mr. Fred Bond, of Cardiff, and the plans have been prepared by Messrs. James & Morgan, architects, Cardiff.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. H. P. Harris, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Finsbury Borough Council 7,800*l.* for paving works, and 1,000*l.* for street improvements; and sanction was given to a loan by St. Pancras Borough Council of 3,842*l.* for contribution to street improvements.

Willesden Drainage.—The Main Drainage Committee recommended:—

"(*a*) That an agreement be entered into with the Willesden Urban District Council on the basis of the conditions set out in the report of the Main Drainage Committee, dated May 2 and June 6 and 27, 1907, relative to the reception, into the metropolitan main drainage system, of the sewage and drainage of the Brent area of the parish of Willesden; that the solicitor do prepare and obtain the execution of the agreement; and that the seal of the Council be affixed thereto when ready.

(*b*) That authority be sought in the session of Parliament of 1908 to enable the Council to receive into the metropolitan main drainage system, and to deal with, the sewage and drainage from the Brent area of the parish of Willesden."

Residential and Day Training College, Avery-hill: Hostel Accommodation.—The Education Committee recommended:—

"That the estimate on capital account of 150*l.*, and the special estimate of expenditure on maintenance account of 1,828*l.*, submitted by the Finance Committee, in respect of the provision and maintenance of hostels for students attending the London County Council Avery-hill Training College (Woolwich), be approved.

That temporary premises be hired for the purpose of providing hostel accommodation for about fifty women students attending the London County Council residential and day training college, Avery-hill (Woolwich), at a rent not exceeding 250*l.* a year; that any necessary repairs and alterations be effected to the premises at a cost not exceeding 560*l.*; and that the necessary furniture and equipment be provided thereat."

Selected List of Contractors.—It was agreed that the name of R. H. & J. Pearson, Ltd., be reinstated on the selected list of contractors to be invited to tender for work to Council schools.

Theatres.—The Theatres and Music-halls Committee reported as to the following works, which were agreed to:—

"Store on a site adjoining the prompt side of the stage at the King's Theatre, Hammersmith-road (Mr. F. H. Jones).

Certain alterations proposed to be executed at the Tiffin Restaurant, 66, Cheapside (Messrs. Still, Wheat, & Luker)."

District Surveyors.—The Building Act Committee submitted the following report:—

"We have considered as to the arrangements that should be made for filling the vacant posts of district surveyors in the districts of (i.) St. James, Westminster; (ii.) Paddington; (iii.) Mile End and Limehouse; (iv.) Hammersmith; (v.) St. George, Hanover-square (Belgrave and Pimlico division); (vi.) Charlton, Kidbrooke, and Lee; (vii.) City of London, East; (viii.) Holborn; (ix.) Strand; (x.) Lewisham, West; (xi.) Lewisham, East; and (xii.) City of London, West. The gross amounts of the fees received during the year 1906 in respect of the districts (i. to vi.) were 2,326*l.*, 1,794*l.*, 1,115*l.*, 1,085*l.*, 1,047*l.*, and 639*l.* respectively. The estimated yearly values of the districts (vii.) to (xii.) are 850*l.*, 820*l.*, 820*l.*, 730*l.*, 600*l.*, and 500*l.* respectively. In response to the advertisement issued, seventy-five applications were received, but in twenty-three cases the applicants did not possess the certificate of competency required by sect. 140 of the London Building Act, 1894, and three, who were not already district surveyors, were disqualified by age. One of the qualified candidates withdrew his application and another was abroad. The remaining forty-seven candidates were all seen by a sub-committee and their qualifications carefully examined. Standing order No. B 86 requires us to submit the names of three candidates for each appointment, but allows us to indicate the candidate whom we recommend the Council to appoint. The names of those whom we consider suitable are set out hereunder, the first named in each case being in our opinion the most suitable for appointment to the district in question:—

(i.) St. James, Westminster—L. R. Ford, F. W. Hamilton, H. N. Kerr.

(ii.) Paddington—F. W. Hamilton, H. N. Kerr, S. F. Monier-Williams.

(iii.) Mile End and Limehouse—H. N. Kerr, R. E. Smith, O. C. Hills.

(iv.) Hammersmith—A. H. W. Glasson, H. A. Legge, W. G. Perkins.

(v.) St. George, Hanover-square (Belgrave and Pimlico division)—S. F. Monier-Williams, A. H. W. Glasson, W. G. Perkins.

(vi.) Charlton, Kidbrooke, and Lee—A. A. Fillary, P. J. Black, C. B. Young.

(vii.) City of London, East—J. Todd, O. C. Hills, H. A. Legge.

(viii.) Holborn—W. G. Perkins, A. A. Fillary, H. A. Legge.

(ix.) Strand—O. C. Hills, R. E. Smith, A. A. Fillary.

(x.) Lewisham, West—W. R. Davidge, A. P. Stokes, C. W. Surrey.

(xi.) Lewisham, East—E. W. Lees, C. W. Surrey, W. R. Davidge.

(xii.) City of London, West—C. W. Surrey, C. A. Daubney, W. H. Stevens.

Mr. F. W. Hamilton (55) and Mr. S. F. Monier-Williams (51), who are both over the age of 50 years, have been district surveyors since 1898, and we are of opinion that their work in their respective districts has been such as to justify their promotion to more remunerative districts. In these circumstances we do not think it necessary to suspend paragraph No. B 17 of our order of reference, which requires that candidates shall not be less than 28 or more than 50 years of age.

"The adoption by the Council of our recommendations in respect of the above-mentioned districts will render vacant the districts at present supervised by Messrs. Ford, Hamilton, Perkins, Monier-Williams, Hills, and Glasson, viz.:—(xiii.) Wandsworth, West; (xiv.) Fulham, North; (xv.) Hackney, West; (xvi.) Sydenham; (xvii.) Hackney, North-East; and (xviii.) Norwood, West. The gross amounts of the fees received during the year 1906 from these districts were:—(xiii.) 1,494*l.*; (xiv.) 795*l.*; (xv.) 806*l.*; (xvi.) 722*l.*; (xvii.) 502*l.*; and (xviii.) 466*l.* respectively. Having regard to the varied characters and values of the twelve districts which were advertised, and to the fact that applications were received from almost all of those known to be qualified for the position of district surveyor, we do not think that it is necessary to advertise the vacancies caused by the promotion of existing district surveyors, and we therefore submit the following names of candidates suitable for appointment to the districts thus vacated:—

(xiii.) Wandsworth, West—R. E. Smith, A. H. W. Glasson, J. Todd.

(xiv.) Hackney, West—H. A. Legge, E. W. Lees, C. A. Daubney.

(xvi.) Sydenham—G. Tolley, A. P. Stokes, P. J. Black.

We do not propose at the present stage to submit recommendations for permanently filling the vacancies in (xiv.) Fulham, North; (xvii.) Hackney, North-East; or (xviii.) Norwood, West; or in Streatham, West, which is also vacant, as we have under consideration the question of the readjustment of the boundaries of some of these districts. We have, however, made temporary arrangements with Messrs. A. P. Stokes, H. A. Legge, A. G. Morrice, and W. H. Stevens respectively for the supervision of these districts in the event of our recommendations being adopted by the Council.

Each of the selected candidates has signed a declaration that he will accept appointment on the terms laid down in paragraph No. B 18 of our order of reference, and Messrs. Ford, Hamilton, Perkins, Monier-Williams, Hills, and Glasson have expressed their willingness to resign their present appointments in the event of the Council appointing them to the districts suggested above. Mr. R. E. Smith, however, asks that he may be allowed to retain his position of Professor of Architecture and Building Construction at King's College until 1910, in order that he may be entitled to retain after retirement from the chair the honorary rank of "Emeritus Professor." We are informed that the time taken up by this appointment is small and will not interfere with the performance of his duties as district surveyor, and we think that permission may be granted."

The Committee recommended accordingly.

General Line of Buildings on the North-western Side of Crystal Palace-parade.—The Building Act Committee reported as follows:—

"On October 9, 1906, the Council decided that all necessary steps should be taken to obtain the decision of the High Court in the matter of the order of the Tribunal of Appeal with regard to the certificate defining the general line of buildings on the north-western side of Crystal Palace-parade, Camberwell, between College-road and Farquhar-road. The case was heard by the Divisional Court on March 18, 1907, when the Court held that the question whether the certificate affected the powers of the South-Eastern and Chatham Railway Companies was not a question for the Tribunal, and allowed the Council's appeal with costs, and remitted the case to the Tribunal. On April 19, 1907, the matter was again before the Tribunal, which dismissed the railway companies' appeal and confirmed the certificate of the superintending architect defining the general line of buildings, and allowed the Council 25 guineas for costs.

These proceedings originated in a summons against the Coal Co-operative Society, Ltd., for having erected a coal order office in advance of the general line of buildings at this part of Crystal Palace-parade without the consent of the Council. This summons, which was adjourned *sine die* pending the result of the proceedings above mentioned, was restored to the list, after the final decision of the Tribunal of Appeal, and the hearing was resumed at the Lambeth Police-court on June 5 and 26, 1907, when the magistrate dismissed the Council's summons with 10 guineas costs on the ground that the land upon which the building had been erected was land over which the railway companies might exercise the powers conferred upon them by their special Act of Parliament for railway purposes, and was therefore exempt from the provisions of Part III. of the London Building Act, 1894, as to lines of building frontage. We consider that the question involved is one of considerable importance, and we therefore recommend that the solicitor do take all necessary steps for a case to be stated by the magistrate in the matter of the proceedings between the Council and the Coal Co-operative Society, Ltd., in respect of the erection of a coal order office in Crystal Palace-parade, Camberwell, and for the decision of the High Court to be obtained upon such case."

The Council, having transacted other business, adjourned.

BOOK RECEIVED.

BURY ST. EDMUNDS: NOTES AND IMPRESSIONS. By the Rev. H. J. Dukinfield Astley. (Elliot Stock.)

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Bermondsey.—Buildings on the south-eastern side of Upper Grange-road, Bermondsey, upon the site of No. 71, and on the north-eastern side of Lynton-road (Mr. T. Sloman).—Consent.

Bermondsey.—Buildings upon the south-western side of Old Kent-road, Bermondsey, between Kinglake-street and East-street (Mr. J. M. Lester for Mr. C. F. Backhouse and Mr. T. B. Ecroyd).—Consent.

Dulwich.—Two one-story shops in front of No. 117, Grove-lane, Camberwell (Mr. S. Bromily for Mr. W. Beecroft).—Consent.

Hackney, North.—Seventeen houses with bay-windows on the western side of Castlewood-road, Hackney, southward of Ravensdale-road, with the flank of one of the houses in advance of the houses on the southern side of Ravensdale-road (Mr. J. Ellwood).—Consent.

Hammersmith.—A building on the northern side of Hammersmith-road, Hammersmith, adjoining the King's Theatre, with a pent roof, wooden oriels and a wooden bay-window (Mr. F. H. Jones for Mr. J. B. Mulholland).—Consent.

Hampstead.†—Coal office buildings on the western side of West End-lane, Hampstead, southward of the entrance footpath to the West Hampstead station (Messrs. Beale & Co. for the Midland Railway Company).—Consent.

Hampstead.—An addition to No. 86, Priory-road, Hampstead, abutting upon Canfield-gardens (Mr. P. W. Hawkins for Mr. M. H. de Hora).—Consent.

Hampstead.—That the application of Mr. A. Whitelaw for the extension of the periods within which the erection of one-story buildings on the east side of West End-lane, Hampstead, northward of "Tower-mansions," was required to be commenced and completed, be granted.—Consent.

Kennington.—A one-story shop in front of No. 178, Kennington-park-road, Kennington (Messrs. Thurgood & Martin for Mr. H. Turner).—Consent.

Kensington, South.—A covered way in front of No. 8, Addison-road, Kensington (Mr. A. J. Hopkins for Mr. E. R. Debenham).—Consent.

Kensington, South.—Balconies in front of proposed flats on the northern side of St. George's-place, Kensington, at the corner of Gloucester-road (Mr. P. Hoffmann for Mr. J. C. Hill).—Consent.

Lewisham.—A wrought-iron sign over the gateway leading to the Forest-hill Brewery, on the north-eastern side of Perry-vale, Forest-hill (Mr. W. M. Proudfoot for the Forest-hill Brewery Co., Ltd.).—Consent.

Lewisham.—Projecting porches and oriel windows to ninety houses in Boyne-road, fifty-five houses in Caterham-road and twenty-nine houses in Belmont-hill, Lewisham (Messrs. H. & G. Taylor).—Consent.

Norwood.—A deviation from the plan approved for the erection of proposed flats on the eastern side of Lyham-road, Brixton, so far as relates to the erection of the six houses northward of Dumbarton-road to the altered line (Mr. H. J. Capell for Mr. A. E. Peacock).—Consent.

Strand.—An addition to the balcony on the Victoria-embankment frontage of the Savoy Hotel, Strand (Messrs. Collcutt & Hamp for the Savoy Hotel Co., Ltd.).—Consent.

Strand.—An iron and glass shelter over the main entrance and two iron and glass shelters on the Wardour-street frontage of a new theatre to abut upon Wardour-street, Shaftesbury-avenue and Upper Rupert-street, Strand (Mr. W. G. R. Sprague).—Consent.

Strand.—Retention of two wood and glass signs attached to the projecting shelter in front of the Royal Institute of Painters in Water-colours, No. 191, Piccadilly (Mr. W. T. Blackmore for the President and Council of the Institute).—Consent.

Wandsworth.—Erection of projecting porches to six houses on the southern side of Bodmin-street, Merton-road, Wandsworth, westward of Acuba-street (Messrs. Turtle & Appleton).—Consent.

Wandsworth.—Retention of balconies in front of two houses on the northern side of Streatham-common North, Wandsworth, westward of Mine-head-road (Mr. W. J. Jones for Messrs. Wooding & Cole).—Consent.

Wandsworth.—One-story shops in front of Nos. 151 and 153, Lower Richmond-road, and No. 1, Stanbridge-road, Putney (Mr. C. Botterill for Mr. J. Williams).—Consent.

Westminster.—A one-story shop in front of No. 117, Victoria-street, Westminster (Mr. R. G. Hammond for the Reformatory and Refuge Union).—Consent.

Wandsworth.—A one-story shop in front of No. 115, Balham-hill, Wandsworth (Mr. H. G. W. Brinsley for Mr. R. Cooper).—Refused.

Wandsworth.—Six one-story shops on the western side of Streatham High-road, Wandsworth, southward of Streatham-town station (Mr. J. W. Stevens for Mr. S. Fortescue).—Refused.

Westminster.—Conversion of a bay-window into an entrance porch at No. 72, Victoria-street, Westminster (Messrs. E. Runtz & Ford).—Refused.

Width of Way.

Finsbury, East.—A hoarding of a temporary character on land at the rear of No. 88, Old-street, Finsbury, within the prescribed distance from the centre of Young's buildings (Mr. O. Archer for the Salvation Army).—Consent.

Width of Way and Lines of Frontage.

Haggerston.—Buildings upon a site on the eastern side of Kingsland-road, Haggerston, also upon the southern side of Pearson-street and western side of Elizabeth-place (Mr. J. Farrer).—Consent.

Westminster.—The retention of two piers in front of a building at the corner of Horseferry-road and Elverton-street, Westminster, projecting upon the public-way in Elverton-street (Mr. D. B. Hedderwick).—Consent.

Fulham.—Erection of shops in front of No. 635, Fulham-road, Fulham (Mr. C. Botterill for the trustees of the Young Men's Christian Association).—Refused.

Islington, North.—A chapel and school building upon a site on the north-western side of Tollington-park, Islington, to abut also upon the south-western side of Pine-grove, at less than the prescribed distance from the centre of the road-way of Pine-grove (Mr. E. D. Hoyland).—Refused.

Width of Way and Construction.

Brixton.—Extension of licence in respect of the temporary iron and glass photographic studio at the rear of No. 28, Coldharbour-lane, Brixton, abutting upon Crawford-street (Mr. G. J. Turner).—Consent.

Greenwich.—Extension of licence in respect of the temporary wood and iron van-shed in the garden at the rear of No. 67, Maryon-road, Greenwich.—Consent.

Line of Frontage and Space at Rear.

Kensington, South.—Five shops on the western side of Earl's-court-road, Kensington, northward of Fopstone-road (Mr. C. R. Guy Hall for Mr. C. Owles).—Consent.

Width of Way, Line of Frontage, and Construction.

Deptford.—A wood and iron building on the south-eastern side of St. John's-road, Deptford, upon a site north-eastward of Cliff-terrace (Mr. W. Hudson).—Refused.

Space at Rear.

Greenwich.—Modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building upon the site of Nos. 112, 114, and 116, Blackheath-road, Greenwich, with an irregular open space at the rear (Mr. J. H. Carte for Messrs. Harrison, Gibson & Co.).—Consent.

Formation of Street.

Clapham.—That an order be issued to Mr. E. J. Golds sanctioning the formation or laying-out of a new street for carriage traffic upon the Cavendish House estate, to lead from Cavendish-road to Clapham-common, South Side (for Mr. H. N. Corsellis).—Consent.

Alteration of Buildings.

Paddington, South.—A modification of the provisions of sect. 77 so far as relates to the uniting of Nos. 39 and 41, Westmoreland-road, Paddington (Messrs. F. D. & H. Head).—Consent.

Camberwell, North.—The conversion of the "Rose and Crown" beer-house, Acorn-street, Camberwell, into two dwelling-houses (Mr. A. J. Redman).—Refused.

The recommendation marked † is contrary to the views of the local authorities concerned.

Architectural Societies.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.—On Thursday, last week, the annual excursion of this Association took place, Chepstow and Tintern being visited. Amongst those present were Mr. F. W. Waller (President), Messrs. Medland, Dancey, Fletcher Trew, and Cullis (Gloucester), Messrs. Chatters, Smithson, Crisp, Healing, Gamon, Lyne, and Overbury (Cheltenham), and Mr. A. L. Iredale (Stroud). The members travelled by a saloon carriage, and *en route* Mr. Medland gave an interesting account of Chepstow Castle, illustrated with maps and plans, and later on both the parish church and castle were visited under his guidance. After luncheon, Tintern Abbey was visited under the direction of the President, who is acting for the Crown in the preservation of

the ruins. Here Mr. Waller pointed out the principal architectural features of this fine Cistercian Abbey, and the very conservative nature of the work executed. Tea was subsequently partaken of, when Mr. Chatters availed himself of the opportunity to thank the President on behalf of the Association for his kind hospitality to the members in inviting them to lunch and tea, and especially for his interesting discourse on the Abbey and the work done. Gloucester was reached on the return journey at 8 p.m.

The Student's Column.

MODERN METHODS OF USING GAS.—II.

Industrial and Commercial Gases—Their Composition and Properties — Calorific Power and Candle-power Defined—Burning an Explosive Mixture—Work Accomplished by 1 cubic ft. of Gas—Heating with High-pressure Gas.

THE gases most extensively used for lighting, heating, or power purposes are enumerated below :—

1. *Town Gas.*—In England, town gas was formerly always coal gas, but it now commonly consists of a mixture of coal gas and carburetted water gas.

2. *Simple Water Gas*, or "blue gas," is made by passing steam through a bed of incandescent coke. When burned in an ordinary flat-flame burner this gas yields a blue, non-luminous flame.

3. *Oil Gas* is made by heating oil to a temperature at which it is decomposed into a mixture of gases and dense coke. When used with suitable burners oil gas yields a very bright flame. The composition of oil gas varies with the description of oil used, and the form of apparatus in which the oil is decomposed. Pintsch's gas, which is largely used for lighting railway carriages, is a form of oil gas.

4. *Carburetted Water Gas* is a mixture of simple water gas and oil gas. When burned in a flat-flame burner it closely resembles coal gas.

5. *Producer Gas* is made by passing air (and usually also steam) through incandescent coke, anthracite, or other form of carbon. It consists essentially of a mixture of carbon monoxide and hydrogen, diluted with 50 to 60 per cent. of incombustible nitrogen and carbon dioxide.

6. *Suction Gas* is a form of producer gas. It owes its name to the fact that, instead of air under pressure being blown through the heated coke, the air is sucked through the coke by the gas-engine which is operated by suction gas previously manufactured. Water vapour is also drawn through the coke at the same time.

7. *Blast-furnace Gas* is the mixture of gases which issues from blast-furnaces used for the manufacture of iron from iron ores. It is a very low-grade gas, containing sometimes over 70 per cent. of incombustible constituents, but is, nevertheless, being successfully used for operating gas-engines.

8. *Natural Gas* is the inflammable gas which exists in some of the cavities beneath the earth's surface. It has been found in considerable quantities in England and many other parts of the world, but chiefly in the United States. In Pittsburg and its neighbourhood great reservoirs of natural gas have been tapped, and for many years the gas has been used in enormous quantities for both industrial and domestic purposes. The gas when first tapped is commonly under a pressure of about 500 lb. per square inch, but the pressure slowly falls until, in the course of many years, the supply fails altogether. Natural gas varies considerably in composition in different localities, but it usually consists mainly of methane, which is commonly known as "marsh gas," and which is a gas of high calorific value.

9. *Acetylene* consists solely of the hydrocarbon $C_2 H_2$. The acetylene obtained by the action of water upon commercial calcium carbide is impure, and usually contains small quantities of ammonia, phosphoretted hydrogen, sulphuretted hydrogen, and other impurities.

Typical Analyses.—The following table of typical analyses will indicate the composition of the different gases. Each description of gas is liable to considerable variation in composition, owing to differences in the composition of the raw materials from which the gases are produced, and to differences in the methods of treatment. In the case of coal gas, for example, the composition varies not only with the description of coal used, but also with the temperature of the retorts in which the coal is carbonised.

TYPICAL ANALYSES OF INDUSTRIAL GASES.

—	London Coal Gas.	Simple Water Gas.	Pintsch's Oil Gas.	Carburetted Water Gas.	Pressure Producer Gas.	Suction Producer Gas.	Blast-furnace Gas.	Natural Gas at Pittsburg.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Hydrogen	50	51	12	35	10	16	4	3
Methane	35	1	45	13	1	1	1	95
Heavy hydro-carbons	4	—	36	12	—	—	—	—
Carbon monoxide	6	40	1	34	24	20	29	—
Carbon dioxide	1	4	1	3	6	6	8	—
Nitrogen	4	4	3	3	49	57	58	2
Oxygen	—	—	2	—	—	—	—	—

Calorific Values.—With the exception, perhaps, of blast-furnace gas, any of these gases may be used for incandescent lighting, or for heating purposes, but their values are widely different, as is shown by the following table :—

CALORIFIC VALUES OF INDUSTRIAL GASES.

—	B.Th.U. per cubic foot (60 deg. Fahr. and 30 in. Pressure).	
	Gross.	Net.
London coal gas	604	540
Simple water gas	308	280
Pintsch's oil gas	1,080	993
Carburetted water gas	551	508
Pressure producer gas	154	142
Suction producer gas	128	118
Blast-furnace gas	118	115
Natural gas at Pittsburg	982	881
Acetylene	1,430	1,373

Unit of Heat.—A *British Thermal Unit* (B.Th.U.) is the quantity of heat required to raise 1 lb. of water 1 deg. Fahr. (from 39·1 deg. to 40·1 deg. Fahr.). In France, the unit of heat is a *calorie*, which is the quantity of heat required to raise a kilogramme of water 1 deg. C. One calorie is equal to 3·968 B.Th.U.

The gross calorific value represents the whole number of heat units obtainable from the gas. When gas containing hydrogen is burned in air, water vapour is formed. When this water vapour is cooled below 212 deg. Fahr. it changes from a vapour to a liquid. At the moment of change evolution of "latent" heat occurs. This latent heat is represented by the difference between the gross and net calorific value. It is only in a few appliances, such as a condensing gas-stove, that this latent heat of the steam formed by combustion is utilised. In most cases the products of combustion escape before they have been cooled to 212 deg. Fahr. If the burning gas contain no hydrogen, as when carbon monoxide burns to form carbon dioxide, then the gross is the same as the net value.

Unit of Light.—The British unit of light is the light emitted by a sperm candle (six candles to the pound) when consuming sperm at the rate of 120 grs. per hour. London gas of 14 candle-power is gas which, when burning at a rate of 5 cubic ft. per hour in a "Metropolitan Argand burner No. 2," will yield a flame having a light intensity equal to that of fourteen standard candles. An ordinary incandescent burner with a mantle, when consuming 5 cubic ft. of coal gas per hour, will yield light of 100 candle-power.

Water Heating.—If the calorific value of the gas to be burned be known, the quantity of water which should, theoretically, be heated to any specified temperature can easily be calculated.

Example.—The calorific value of the gas is 600 B.Th.U. Then 1 cubic ft. of the gas will heat 600 lb. (60 gallons) of water 1 deg. Fahr., or will heat 1 gallon 60 deg. Fahr., or will heat 60 oz. (3 pints) 160 deg. Fahr. One cubic foot of the gas is capable, therefore, of raising the temperature of 3 pints of water 160 deg. Fahr., or from 52 to 212 deg. Fahr.

In practice it is impossible to utilise all the heat evolved by the burning gas. In good bath water-heaters in which the heat is imparted to circulating water, about 80 per cent. of the heat is utilised, but when water is boiled in common household utensils less than 50 per cent. is, in many cases, utilised.

Flame Temperature.—The calorific value of a gas alone does not afford an indication of the temperature of the flame yielded by that gas when burning in air under normal conditions. Marsh gas, for example, has a higher calorific value than hydrogen, but it requires much more air for its combustion, and the flame is, therefore, so largely diluted with atmospheric nitrogen that the temperature of the flame is lower than that of a hydrogen flame. The quantities of carbon dioxide and water vapour formed by the combustion of marsh gas absorb more heat than the smaller quantity of water vapour produced by the combustion of an equal volume of hydrogen. In the following table the maximum flame temperature (Dr. Gray's figures), the quantities of air required for combustion, and the calorific values of the three principal combustible gases are shown :—

—	Max. Flame Temp.	Air Required by One Vol. Gas.	B.Th.U. per cubic foot.
	Deg. C.	Vols.	Gross.
Hydrogen	1,960	2·4	325
Methane (marsh gas)	1,850	9·5	1,024
Carbon monoxide	2,100	2·4	310

The intensity of light emitted by an incandescent mantle is dependent upon flame temperature. Hence, whilst the value of gas for water-heating depends mainly upon its calorific value, its value for incandescent lighting is mainly dependent upon its flame temperature.

Flame Volume.—The flame yielded by a Bunsen burner increases largely in volume when the air inlets at the base of the burner are closed. The rate of gas consumption and the composition of the gas supplied to the burner remain the same, but the temperature of the flame is at once reduced. When the air inlets are closed the flame becomes larger because the gas escaping at the burner-head has to traverse a larger area of the atmosphere to find sufficient oxygen for its complete combustion. The total quantity of heat emitted by a small non-luminous coal-gas flame is precisely the same as that emitted by the larger luminous flame consuming the coal gas at the same rate, and for water-heating there is no difference between the value of the non-luminous and the luminous flame. For many purposes, however, the heat of the flame has to be concentrated upon a small area, and, in such cases, the smaller flame obtained by admitting air to the burner before the point of ignition is more useful than the luminous flame.

Burning an Explosive Mixture.—A mixture of gas an air which would be explosive if ignited under atmospheric pressure burns without explosion if, before ignition, it has been so compressed that, as it issues from the burner, it has a velocity sufficiently high to prevent the flame from travelling backwards.

Burning Gas Under Water.—A naked gas flame may be maintained under water by using a specially-constructed burner supplied with an explosive mixture of gas and air under a sufficiently high pressure. A suitable burner has been devised by W. Smethurst. It was proposed that the submerged

flames should be used to effect the evaporation of water or other liquid, but, so far as the writer is aware, the invention has not been extensively used. The products of combustion escape with a bubbling noise through the liquid.

Specific Gravities.—When calculating the quantity of gas which will be delivered through a pipe of given dimensions under a specified pressure, the specific gravity of the gas is a factor which has to be taken into consideration. The following table shows the specific gravity of the different industrial gases :—

WEIGHTS OF INDUSTRIAL GASES.

—	Specific Gravities.	Weight of 1,000 cubic ft. of Gas at 60 deg. Fahr. and 30 in. Pressure.
		lb.
Air	1·00	76·6
London coal gas	0·37	28·3
Simple water gas	0·53	40·5
Natural gas at Pittsburg	0·55	42·1
Carburetted water gas	0·62	47·5
Pintsch's oil gas	0·63	52·0
Pressure producer gas	0·82	62·8
Suction producer gas	0·85	65·1
Acetylene	0 91	69·7
Blast furnace gas	0·97	74·3

WORK ACCOMPLISHED BY 1 CUBIC FT. OF COAL GAS.

One cubic foot of coal gas will yield light of 20 candle-power for one hour (ordinary gas pressure); or will yield light of 35 candle-power for one hour (high gas pressure); or will boil 1 pint of water (starting at, say, 60 deg. Fahr.); or will heat a gallon of water from 50 to 100 deg. Fahr.; or will heat 1,500 cubic ft. of air 30 deg. Fahr.; or will melt 2 lb. of lead in a light ladle.

The heating results of 1 cubic ft. of gas are those published by the late Mr. Thomas Fletcher, and can be obtained only under favourable conditions. Under rough working conditions the duty performed by the gas as a heating agent is often 50 per cent. lower; but the lighting efficiencies given in the table are sometimes exceeded in actual practice.

Heating with High-pressure Gas.—A practice which is gaining popularity in establishments in which the consumption of gas for industrial purposes is very large is to raise the pressure of the gas by means of a rotary blower. The following three examples were mentioned by Mr. Fenn, of the Gas Light and Coke Company, at the recent Engineering Conference in London :—

1. *The "Daily Mail" Offices.*—High-pressure gas is being used for melting the linotype. To melt 60 tons of linotype per week the quantity of gas consumed costs about 2*l.*

2. *A Varnish Factory.*—The pans are now all heated with high-pressure gas, and seven or eight men now accomplish work which formerly required sixteen men. About 250,000 cubic ft. of gas per quarter are consumed.

3. *A Factory Boiler.*—In a factory in Holloway a vertical boiler is heated by gas. By introducing a blower to increase the pressure of the gas the consumption has been reduced to about one-half of the amount used with low-pressure gas, and it is now possible to raise 60 lb. steam pressure in fifty-five minutes, whereas formerly it took two hours to obtain 25 lb.

Obituary.

MR. MORGAN.—The death at Aberdeen, on July 3, is announced of Councillor John Morgan, builder and contractor, who carried on a large business in the North of Scotland, and was managing partner of Messrs. Adam Mitchell & Co., of Aberdeen, at the time of the building by them in 1888 of the pedestal for Mr. W. Grant Stevenson's colossal bronze statue of Wallace at Aberdeen. The most important of Mr. John Morgan's recent works is the new buildings, with the Mitchell Tower and Hall, and the Students' Union, of Marischal College, for Mr. A. Marshall Mackenzie, A.R.S.A., the architect, which were inaugurated by the King and Queen last autumn.

General Building News.

SLALEY CHURCH, HEXHAM.—Mr. Arthur B. Plummer, the Newcastle Diocesan Architect and Surveyor, has been appointed architect for the restoration of Slaley Church, near Hexham. The church will be reglazed and reseated, etc. The gallery will be removed, and a porch, etc., will be built. About 700*l.* will be expended at first, but it is expected that a reredos and other like further work will also be taken in hand before the work is finished.

ROMAN CATHOLIC CHURCH, NORTH SHIELDS.—The foundation-stone of St. Joseph's Roman Catholic School, now being erected in Lovaine-place, North Shields, was laid recently. The building will be erected on the central-hall principle, with a central hall, 58 ft. long by 24½ ft. wide and 17½ ft. high. There will be, in addition, seven classrooms, and accommodation will be provided for 360 boys. The building will be erected of Pelaw red brick by Messrs. Jones & Maxwell, with Heworth stone dressings and terra-cotta facing. Messrs. H. Gibson and P. J. Steinlet, of North Shields, are the architects, and the contract has been let to Mr. James Dobinson, of the same town. Mr. W. Carlin is clerk of works.

PROPOSED NEW CHURCH, PLUMPTON.—Plans have been prepared by Mr. R. S. Lorimer, of Edinburgh, for a church to replace the present dilapidated XVIII-century fabric at Plumpton. The new church is designed to seat a congregation of 160, and is estimated to cost about 3,000*l.*

TEWKESBURY ABBEY.—The restoration of the west front and towers of Tewkesbury Abbey is now in progress, and will shortly be completed. The work is being carried out under the supervision of Mr. J. Oldrid Scott, the Abbey architect, who in 1896 drew a specification of the necessary work to complete the restoration of the edifice.

CHURCH RESTORATION, EXBURY.—Tenders having been invited for restoring Exbury Church, seven were received, and that of Messrs. Musselwhite & Sapp, of Basingstoke, has been accepted. The work will cost over 2,000*l.* The plans were drawn by Mr. John Oldrid Scott, and provide for the lengthening of the church by the addition of a sanctuary and the removal of the gallery from the west end. A vestry on the south side and an organ-chamber opposite form the chief additions. The walls, which are of white brick, are to be faced externally with Ventnor rubble. The main door is to be removed from the west front to the west end of the south side, over which a temporary wooden porch is to occupy the site of a future tower. Two stained-glass windows are also to be added, one at the east end and one at the west end of the building.

CONGREGATIONAL CHURCH, WHITLEY BAY.—A new Congregational Church has been erected at Whitley Bay. The church stands on the junction of Park-parade and Park-avenue, and will be entered from Park-avenue through a central entrance porch leading to the inner vestibule. The side aisles are divided from the nave by stone columns and arches, and there are two inner aisles running the whole length of the church. The choir is arranged in an elevated chancel with the rostrum in the centre, and the organ will be placed in a recess at the back of the chancel. At the rear of the church there are vestries for the minister and deacons, and at one side and facing into Park-avenue there is a large lecture-room or church parlour, at the rear of which there is a kitchen and lavatories, etc, also staircase leading to ladies'-room, etc., over kitchen. At the south-east corner a clock tower is being erected, which will be used as the Park-parade entrance to the church, and will contain the stair-case to gallery. The church will accommodate 500 people, and the gallery another 100, and if further accommodation were necessary, a movable partition between the church and lecture-room has been arranged, so that another 100 persons could be provided for. The schools, which will be built later, will be at the rear of the church. Mr. B. Bolam, of Birtley, is the contractor for the work, and the architects are Messrs. T. E. Davidson & Son, of Newcastle-on-Tyne.

HEXHAM ABBEY.—On the 29th ult. the foundation-stone of the nave of Hexham Abbey was laid on the site of St. Wilfrid's Cathedral. The plans adopted and approved for the restoration are an amendment of the fourth series that Mr. Temple Moore had drawn out. They embody a design of late Decorated Gothic. They comprise the nave proper of the same altitude as the adjoining transepts and with a roof of the same pitch and character as that upon the north transept. The south wall rises shear from the ground, over 60 ft. in height, and has, in its lower portion, a range of eight two-light windows, in pairs, while the clearstory has five three-light windows. The north side has an arcade of five lofty arches opening into the aisle, to which is now to be added a sixth of lesser altitude at the east end against the north-west tower pier. Above the arches the clearstory is repeated. The old west doorway, having been found in better preservation than was expected, is being restored, as is that adjoining to it on the south side area, opening into the cloisters. The great west window is to be of five-lights, and the old newel stair in the north-west angle is to be carried up and is to terminate in an octagonal turret. The money required for rebuilding the nave (some 18,000*l.*) has been assured by the benefaction of the late Mr. Thomas Spencer. In addition a sum of 10,000*l.* is needed to furnish it, heat and light the whole church, and carry out many other matters of renovation recommended by Mr. Temple Moore and Mr. C. C. Hodges, the associated architects.

NEW CHAPEL, HERTFORD COLLEGE, OXFORD.—On the 5th inst. a memorial-stone was laid in the new chapel at Hertford College by the Bishop of Oxford. The chapel, the architect of which is Mr. T. G. Jackson, and the builders Messrs. Jacob Long & Sons, of Bath, is to be faced with Gibraltar stone with Clipsham stone dressings, and will have an oak timber roof and ceiling. The cost will be about 7,250*l.*

SCHOOL ENLARGEMENT, GRAYS.—Palmer's Endowed School at Grays has been enlarged by the addition of a new wing. The buildings consist of a girls' block, a boys' block, swimming-bath, gymnasium, and a technical instruction block. On the girls' side additions have been made of new classrooms—capable of conversion into an additional hall—bath-room, botanical laboratory, and a cookery school. On the boys' side the addition consists of three new classrooms, cloak-rooms, a boys' common room, and additional cubicles in the dormitories. The new technical block has had to be designed as an addition to the existing senior chemical laboratory, lecture-room, and physics laboratory, and comprises on the ground floor a junior chemical laboratory fitted with teak-topped tables. Adjoining this is a preparation-room for lectures and demonstrations in the adjoining lecture-hall, a balance-room, and an optical-room. On the eastern side there is a manual-room, fitted with benches and tool racks, electric-motor lathe, grindstone, and forge. Adjoining this is the girls' common room, with cloak-rooms and lavatories adjoining. On the first floor are the technical classrooms for engineering, building construction, etc., and at the further end of the building is the art-room, with a north light. The block is from the designs of Mr. Christopher M. Shiner, architect. The work has been carried out by Messrs. C. Wall, Ltd., contractors, at a cost of about 12,000*l.*

WESLEYAN SCHOOL-CHAPEL, MALVERN.—A new Wesleyan school-chapel is being erected on a site in Somers Park-avenue. The total cost of the scheme will be about 1,000*l.* The building is of brick and Bath stone, with a tiled roof. The architect is Mr. T. W. Holds; the builder is Mr. M. Wilesmith, jun.; and the stone work is entrusted to Mr. T. Jones, of Belmont and Malvern Wells.

HIGHER ELEMENTARY SCHOOLS, BELPER.—A start has been made in the building of the Higher Elementary Schools and Pupil Teachers' Centre at Belper, the architects of which are Messrs. Hunter & Woodhouse. The main block is to be in the Gothic style, and of local stone from the Red-lane quarries of Mr. Strutt, at Makeney. The floors will be fireproof throughout, and the windows are to have iron casements, with lead glazing. The roof will be covered with green Westmorland slates. To the boundary of the road will be a stone wall, with piers and iron fencing alternating. On the left will be the cookery centre, and at the other end the manual training centre. The large block is to be entirely for the use of the higher elementary department and the pupil teachers' centre. These will be composed of class rooms, surrounding a large central hall, which goes through the two stories, and the higher rooms can be approached from a balcony. The upper floor will comprise art and science rooms and laboratory. At the rear is to be the playground, covered and laid with tar paving. Probably baths will be part of the scheme, but whether they are to be for the use of the school only or for public benefit is not settled. Their construction has not been included in the estimate upon which the work is proceeding. The entire cost, including the land, will be about 15,000*l.*

CLUB PREMISES, WIDNES.—New premises are to be erected for the Widnes Liberal Club on a site at the corner of Widnes-road and Brunn-street. The building will be entered from Widnes-road by a hall leading to the club lounge. A dining-room and smoke-room are provided on the right and left entering from the hall. The billiard-room is reached from the club lounge, and provided with lavatory accommodation. The keeper's kitchen is placed on the ground floor. The ballroom is placed over the billiard-room on the first floor, and is provided with a small stage for the orchestra, with a hinged extension for use in the case of meetings, etc. A small balcony to hold forty to fifty people is placed over the entrance. A crush hall gives access to the ballroom, reached with a separate entrance from Widnes-road. The keeper is provided with a suite of rooms on the second floor, and a wash-cellar and larder are placed in the basement. The buildings are

to be built of the best Ravenhead bricks, the walls faced with the same materials, the copings, window mullions, etc., to be in a suitable grey stone, and the roofs covered with rustic Percelly Welsh slates. The architects are Messrs. Egerton L. Bower and T. F. Shepheard, Liverpool, and the cost will be about 2,500*l.*

NEW BATHS, TOOTING.—The Tooting Public Spray Baths were opened on the 24th ult. On the ground floor of the new building provision is made for twenty spray baths, and on the first floor eight ordinary or slipper baths have been erected. Waiting-rooms and conveniences are provided for each class and sex. Each spray chamber has two dressing boxes by which the bath may be in constant use during times of pressure. Each chamber contains an earthenware foot-bath sunk into the floor, and a seat for the bather with a spray overhead. The walls of the bath chambers are lined to a height of 6 ft. 6 in. with glazed brick. The men's baths have continuous lantern lights, covered with metal bar glazing and with numerous side sashes for ventilation purposes. The women's baths are partly covered in the same way and partly lighted by windows above the partitions. The baths have been designed by Mr. Henry Druery and Mr. E. R. Dolby, M.Inst.C.E., and have cost 6,250*l.*

PARISH HALL, BOURNEMOUTH.—The foundation-stones have just been laid of a new parish hall for St. Peter's Church, Bournemouth, in Hinton-road. The building is to cost 6,500*l.* There will be room in the basement, and the hall itself will accommodate about 450 people. Messrs. Jones & Seaward are the contractors, and Messrs. Hawker & Mitchell the architects.

SOLDIERS' HOME, SHORNCLIFFE.—The foundation-stones were recently laid of the Wesleyan Soldiers' Home, which is now being constructed at Shorncliffe Camp. The building will be of red bricks with stone dressings and a roof of green slates. On the ground floor there will be a bar and refreshment-room and a games and smoking room, and also a billiard-room, and the kitchen accommodation. On the upper floor there will be a lecture-hall capable of seating about 200 persons, and adjoining it two class-rooms that can be used in conjunction with the hall. The other accommodation includes a reading and writing room for the men and apartments for the staff. The cost of erection is estimated at 3,000*l.* The architects are Messrs. Ruck & Smith, of Maidstone, and the contractors are Messrs. G. Wallis & Sons.

PUBLIC SWIMMING BATH, NORWICH.—The Norwich Corporation have constructed a new open-air swimming bath in St. Martin's. The bath, which is a concrete one, is 150 ft. long and 50 ft. wide, the depth ranges from 3 ft. at one end to 6 ft. at the other, and there are 104 dressing-boxes. The City Engineer prepared the plans of the work, and Mr. Cleverley was the clerk of the works.

SALVATION ARMY BARRACKS, WAKEFIELD.—New Salvation Army barracks are in course of erection on a site in Almshouse-lane. The structure is to be of Accrington brick, with cement facings. There will be accommodation for 350 adults and 200 children. The total cost is estimated at about 2,000*l.* Messrs. Bramald & Broadhead, Wakefield, are the contractors, and the plans have been prepared by Mr. Alex. Gordon, architect.

LANCASTER COUNTY ASYLUM.—A new villa for private male patients is being erected at the County Lunatic Asylum, Lancaster, by the County Asylums Board at a cost of 6,000*l.* On the ground floor there are two day-rooms, a reading-room and dining-room, kitchen, sculleries, bath-room, etc., whilst upstairs are two dormitories, ten single rooms with beds for patients, and rooms for attendants. The building, which is 120 ft. long by 60 ft. wide, is faced with stone, and has fireproof floors throughout. Accommodation is provided for fifty male patients, and there is in contemplation the erection of a villa on similar lines for females. The contractors are Messrs. R. S. Wright & Sons, Lancaster, and the architect is Mr. H. Aspinall, of Liverpool and Blackburn.

NEW SHIPPING OFFICES, NEWCASTLE.—The Blyth Shipbuilding Co., Ltd., have removed the business of their general offices to a building specially erected for them on a site abutting the Quayside near Gregory-street, also in Cowpen Quay. Messrs. Armstrong & Wright, of Newcastle, prepared the plans of the new building, and the scheme has been carried out by Mr. Richard Baxter, of Blyth.

COUNCIL OFFICES, ORRELL.—New offices are being erected for the Orrell District Council. The work is being carried out from plans prepared by Mr. Pennington, architect, by Mr. Massey, contractor.

PROMENADE, NEW BRIGHTON.—The foundation-stone was laid a short time ago by Mr. W. H. Lever, M.P., of the new promenade which is being constructed at New Brighton. The promenade will be 790 yds. in length, and will extend to the Marine-drive. Mr. H. W. Travers is the engineer of the scheme.

BAPTIST MANSE, CROYDE, DEVON.—A manse has been erected for the pastor of the Baptist community of Croyde and Georgeham. The building consists of dining-room, drawing-room, kitchen, scullery, four bedrooms, and a bath-room. It is built of local stone, the front being stuccoed. The contractors were Messrs. Cooke & Sons, of Barnstaple, the architect being Mr. J. C. Southcombe, also of Barnstaple.

Sanitary and Engineering News.

DRAINAGE, ROYAL EXCHANGE.—The City Corporation, as joint owners with the Mercers' Company, have agreed to share with that company, in equal parts, the expense, amounting to 4,000*l.*, of carrying out an entirely new scheme of drainage for the Royal Exchange.

WATER SUPPLY, PAIGNTON.—At Paignton recently Mr. A. W. Brightmore, D.Sc., M.Inst.C.E., Local Government Board Inspector, held an inquiry relative to the Urban District Council's application for leave to borrow 12,861*l.* for the distribution in Paignton of the water which is being brought from Holme Moor, at a cost of 12,861*l.*, including works at Marldon, where the home-service reservoir has been constructed. Mr. F. W. Vanstone, engineer, explained the scheme, which is concerned chiefly with the provision of new mains. Mr. W. G. Couldrey, architect and surveyor, Mr. H. Drew, on behalf of the builders of the town, who have taken up sites to the extent of 10,000*l.*, and Mr. W. Bridgman (Bridgman & Bridgman, architects), representing one of the large landowners in the district, supported the scheme.

LOUGHBOROUGH WATERWORKS.—Two new filter-beds have been constructed at the Nanpantan Reservoir for the purpose of dealing with the new supply from the Blackbrook Dam. These filter-beds form the first instalment of a complete set of eight, which will be constructed as the requirements of the town and district increase, and demand an extra supply. Each filter-bed is 78 ft. by 67 ft., and is filled to a depth of 4 ft. with filter sand. Attached to the new filters is a pure water well 160 ft. in length, 30 ft. wide, holding 10 ft. of water, equal to a capacity of 286,000 gallons. The works have been constructed by administration, and the total cost amounts to 5,500*l.* The engineers are Messrs. G. & F. W. Hodson, and the resident engineer Mr. C. E. Robinson.

PLYMOUTH MAIN DRAINAGE.—With the linking up of the old sewers with the new system the Plymouth main drainage scheme is now completed and in full work, and Messrs. Mansergh, the engineers, have presented to the Special Drainage Committee of the Corporation their final report. The scheme was designed to meet the requirements of a population of 138,500.

NEW SEWAGE DISPOSAL WORKS, CAVERSHAM.—The opening of the new sewage disposal works at Caversham took place a short time ago. The drainage of the district is on the separate system, the surface water being conveyed to the river by four main outlets. The whole of the sewage of the district is collected in the main low-level sewer and delivered through a small screen-chamber into the receiving well at the outfall works, 18 ft. below ground level and 12 ft. below river level. The sewage is almost purely domestic as there are no trade wastes discharging into the sewers with the exception of two laundries. The whole of the work was let in three contracts:—1. Cast-iron effluent drain to river Thames, Mr. J. H. Macdonald, Oxford, contractor; amount of contract 877*l.* 2. Main disposal works, Messrs. Collier & Catley, Ltd., Reading, contractors; amount of contract, 6,817*l.* 3. Foreman's cottage, Messrs. Batten Brothers, Reading, contractors; amount of contract, 325*l.* The Council appointed Mr. E. H. Horncastle, formerly Assistant Surveyor, as clerk of the works; Mr. A. J. Smith, engineer and surveyor, was the author of the scheme.

LICHFIELD SEWERAGE WORKS.—Mr. H. Shelford Bidwell, C.E., Inspector of the Local Government Board, held an inquiry on the 3rd inst., at Lichfield, in reference to an application by the Corporation to borrow 5,625*l.* for purposes of sewerage and sewage disposal. Mr. Herbert Russell, Town Clerk, explained that the Corporation had abandoned a proposed extension of Hobbs Hole-lane sewer, including the estimated amount to be paid for compensation and for contingencies, for which it was calculated a sum of 1,798*l.* would have been required. That reduced the loan desired from 5,625*l.* to 3,826*l.* The latter sum was required for the following purposes:—(1) Sewerage extensions in the city, in addition to those for which a loan of 7,000*l.* had already been sanctioned, 1,759*l.*; (2) additional filter beds and alterations and additions to sewage disposal plant, 1,400*l.*; (3) erection of two workmen's cottages at the sewage farm, 350*l.*; (4) purchase of land in Becaon-street for dealing with storm water, 250*l.*; (5) legal charges for mortgages, etc., 67*l.* Mr. J. R. Elliott, of Nottingham, the engineer engaged, explained the details of the sewerage extensions. Mr. W. B. Chancellor, City Surveyor, described the proposed new disposal works at the sewage farm. For these he said that 200*l.* more than was included in the proposed loan would be required.

Foreign.

SPAIN.—A Consular report from Barcelona states that the improvement of that city, which has occupied the attention of the municipal authorities for some years past, is now definitely decided upon. It will take the form of the demolition of old and insanitary houses in the too densely populated districts and the opening up of new boulevards. This work, it is expected, will be commenced before the coming winter, and will secure full work for labourers and others for some considerable time. The building trades especially expect to be very busy. An international exhibition is to be held in Barcelona in 1910 or 1911. The Protestant Cottage Hospital, which has done excellent work in the city for many years, has opened an isolation ward for infectious cases.——The port works at Castellon are being continued, and the subvention of 300,000 pesetas per annum is being spent on them, besides what is collected for dues.——Work on extending the eastern breakwater at Tarragona still continues, but very slowly. The contractor has been changed, and it is expected the work will now proceed faster.——The Municipality of Valencia has lately inaugurated various improvements in that city. The new tobacco factory is in course of construction, and large sums are being spent in clearing away slum property and building new streets in the centre of the city. The approach to Valencia from the Grao is being widened and the water supply of the city improved.

ITALY.—The committee of artists, architects, and engineers which is superintending the restoration of the Campanile, Venice, has issued a Report which includes the following items:—The Committee is perfectly satisfied with the choice of the building material and does not agree with the opinion of Professor Luscardo, which led to the interruption of the work. The brick selected is strong and durable in spite of the efflorescence which is produced by the sulphates it contains. The mortar also has the necessary properties, although the sand is limy and the cement contains, like all cements, a small admixture of sulphates. The Report observes that although technically a chemically pure material is desirable, yet the beautiful weathering of brick in Venice is due to impurities in the material, which are not necessarily harmful. The second part of the Report deals with the work already executed. The Committee is thoroughly pleased with the foundations, which have been built with great care. Since the whole building is to be lighter, its base widened, and its greatest weight at the periphery carried by new ground walls, the pressure per square centimètre has been reduced from 10 to 4·3 kg., hence lessened by a half. The Committee sanctions the use of ferro-concrete for the belfry and the steeple, as also the method of placing the angel on the apex. The third part of the Report deals with the exterior of the tower. Venice is responsible for the catch-word "Where it was, and as it was." The Committee is of opinion that "as it was" does not mean that the accidental inclination of the building, the unequal base, the crushed, bad material and the patina on the old belfry shall be reproduced. The form will be the same old form; the material new, albeit matching the old as far as may be, but the evils wrought by time are not to be artificially supplied. Finally, the Report sanctions the restoration of the five external steps up to the tower, only three of which remained visible owing to the sinking of the building. The Loggetta is to be built independent of the Campanile, which under favourable circumstances should be completed towards the end of 1909.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Messrs. Thomas Faldo & Co., asphalte manufacturers and contractors, have removed their London offices from Rotherhithe-street to Effingham House, 1, Arundel-street, Strand, W.C.

MANCHESTER BUILDING BY-LAWS.—The Manchester City Council early in the spring adopted new building by-laws intended to improve the quality of houses and enlarge the air space around new dwellings. These by-laws were sent to the Local Government Board for consideration and ratification, and have now been returned. Several alterations, says the *Manchester Guardian*, have been suggested, and the Improvements Committee will meet at an early date to consider them.

LONDON COUNTY COUNCIL CENTRAL SCHOOL OF ARTS AND CRAFTS.—The eleventh annual exhibition of the work of students of the above School will be on view at 316, Regent-street, W., on Thursday and Friday, 11th and 12th inst., from 10 till 8, and on Saturday, the 13th, from 10 till 5. The exhibits comprise original work in bookbinding, printing, writing, and illumination, lithography, silversmiths' and jewellers' work, chasing and engraving, die-sinking, enamelling, stained glass, carving and gilding,

cabinet work and inlaying, furniture design, architectural design, miniatures, lace, embroidery, china painting, modelling, drawing and design for various processes. Admission is free on signing the visitors' book.

EWEN HALL AND INSTITUTE, BARNET.—A hall and institute has been erected at Barnet in memory of the late Mr. J. A. Ewen, J.P. The buildings, designed by Mr. Charles W. Waymouth, were built at an estimated cost of about 5,000*l.*, and will provide for an extension of the Sunday-school work and agencies amongst the junior members of the Congregational Church in Barnet.

WHITEFIELD CONGREGATIONAL CHURCH, MUSWELL HILL.—On June 29 Mr. M. Holmes, Chairman of the London Congregational Union, laid the foundation-stone of the Whitefield Tabernacle Congregational Church, on the Alexandra Park Estate, Muswell Hill, upon a site at the corner of Victoria and Alexandra Park roads. The cost of the church is defrayed for the most part by the sale of the freehold of the Whitefield Tabernacle, Finsbury, of which we recently printed a short account. The new building, to accommodate about 550 persons, is being built by Mr. Albert Monk, of Edmonton, from the plans and designs of Messrs. Mummery & Fleming Williams, of Wood Green.

CAMBRIDGE UNIVERSITY: THE SLADE PROFESSORSHIP.—The Vice-Chancellor has notified that the Professorship of Fine Art in the University, upon the foundation of Felix Slade, is now vacant, and that the Board of Electors will meet to select a professor on Tuesday, October 15. The stipend is about 340*l.* per annum, and the professor is not required to reside within the limits of the University. Candidates should send in their names to the Vice-Chancellor, at the Lodge, Gonville and Caius College, on or before October 1.

ALMSHOUSES FOR TWICKENHAM.—The late Mr. William Candler, of Richmond, has bequeathed 5,000*l.* in trust to be applied in two equal parts to the buying of a site and the erection thereon of six almshouses for aged widows and spinsters, residents of Twickenham, and to the maintenance of the buildings and payment of allowances to the almswomen. Mr. Candler's testamentary dispositions also provide for the erection of a central hall or institute for the Richmond branch of the Independent Order of Oddfellows.

W. E. HENLEY MEMORIAL.—The bronze bust of the late poet, which, set in a frame of white marble, has been erected in the crypt of St. Paul's Cathedral, is the gift and work of M. Auguste Rodin. The frame is inscribed "W. E. Henley—poet, 1851—1903"; it was designed by M. Rodin. The work for the erection of the memorial has been carried out by Mr. John Tweed.

LIVERPOOL UNIVERSITY.—At the Liverpool University, on the 28th ult., Mr. John Belcher gave a lecture in connexion with the exhibition of students' work which is being held there, on "The Principles and Qualities to be looked for in Buildings." Architecture, said the lecturer, should neither deceive nor present surplus ornament. Just as simple language free from adjectives was the most powerful, so was simple architecture free from excess of ornamentation the most effective. Engineering was scientific, but architecture ought to be artistic as well as scientific. Mr. Belcher illustrated each section of his lecture by lantern slides and sketches, and incidentally demonstrated how statues or mouldings could be accentuated in size by the juxtaposition of smaller figures or ornament.

LIVERPOOL HOUSING PROBLEM.—In December last the Liverpool City Council instructed the Housing Committee to report (*a*) "whether the work of clearing away insanitary dwellings and rehousing the people dispossessed can be expedited; (*b*) whether the committee can suggest any improvement with regard to the selection of areas for rehousing the dispossessed." The committee have now reported. The estimated number of structurally insanitary houses remaining to be dealt with is 7,421, two-thirds of which are back-to-back houses, while the needs of some of the others might be met by alterations.

PARNELL MEMORIAL.—The statue of Parnell for the Parnell Monument and the bronze decorative sculptural work have arrived at Liverpool, and will be exhibited in Dublin pending the erection of the shaft. Mr. St. Gaudens, the sculptor, was entrusted with the execution of the work.

THE ENGINEERING STANDARDS COMMITTEE.—The Council of the Institution of Civil Engineers have appointed Sir William Matthews, K.C.M.G., President of that Institution, to succeed the late Sir Benjamin Baker, K.C.B., K.C.M.G., as one of their representatives on the Main Committee of the Engineering Standards Committee.

METROPOLITAN ASYLUMS BOARD.—At the fortnightly sitting of the Metropolitan Asylums Board on Saturday, the Finance Committee reported that they proposed to forward to the Local Government Board the completed estimate of cost of erection of the goods reception station, porter's lodge and staff cottages at the Joyce Green Hospital which had been handed to them by the Works Committee, and to ask the Board to issue an order authorising the expenditure. The revised estimate was:—Amount of tender (including 250*l.* contingencies), 4,713*l.*; provision of water supply, 200*l.*; architect's charges, 248*l.* 10s. 6d.; quantity surveyor's charges, 70*l.* 14s.; clerk of works' salary, 109*l.* 4s.

PRESENTATION TO A SURVEYOR.—At a recent meeting of the Aston Town Council the members expressed their appreciation of the services rendered to the borough by the Surveyor, Mr. G. H. Jack, by the presentation of an address in album form and a cheque. Mr. Jack leaves his present position as he has been appointed County Surveyor of Hereford.

EXHIBITION OF DECORATIVE ART.—In connexion with the forthcoming visit of the National Association of Master House Painters and Decorators of England and Wales to Liverpool next September, it has been arranged to hold an exhibition of decorative and applied art in St. George's Hall. This will be the second occasion on which the National Association has visited Liverpool and had a Liverpool man for its president. The last time Mr. Alexander G. White filled the chair. This year the presidential chair is filled by Mr. G. H. Morton, and the present Lord Mayor has promised to preside at the opening of the exhibition, and has expressed his intention to receive the members at the Town Hall or the Walker Art Gallery. The Association has taken up the question of the education of the apprentices and young men engaged in the trade, and during its existence has spent close upon 2,000*l.* in the furtherance of this object. The educational scheme combines an annual competition of work done by the apprentices and sons of members of the Association, to which about 70*l.* is distributed in prizes; and in conjunction with its sister Associations of Scotland and Ireland a travelling scholarship of the annual value of 50*l.* was founded in 1901. This has been won five times, and the prize has gone to Yorkshire, Leicester, Scotland, and Devonshire, and on one occasion divided and supplemented between Scotland and Yorkshire. In addition, for nearly four years the Association supported a school of its own for the teaching of decorative art. This for the time being is suspended. Space at St. George's Hall has been placed at the disposal of its School of Art and of the Technical School for a display of the works of the students.

GALWAY GRANITE.—As we have more than once referred to the productions of the Galway granite quarries (latterly in connexion with the exhibit of them at the Dublin Exhibition), we may mention that the "Galway Granite Quarry and Marble Works" have now offices in London, at 30, John-street, Bedford-row. They are showing there samples of the Balagh, Barna, Shantallah, and Spiddal granites; and of the Connemara Green, Irish Red, Galway Black, and Pinka Grenna marbles; the last-named a white marble with pink and green tinges and a dark-brown vein. We think it very desirable that these Irish products should have a fair trial; and hope architects intending to use marble or granite will give some attention to them.

Legal.

PLYMOUTH BUILDING DISPUTE.

MR. JUSTICE NEVILLE, in the Chancery Division on the 2nd inst., commenced the hearing of the case of Selmon and others *v.* Norman, an action in which the plaintiffs asked for specific performance of a contract for the purchase by the defendant of a building known as Spooner's Corner, Plymouth, at the agreed price of 26,000*l.*, 6,000*l.* of the purchase-money having been paid. Defendant, on the other hand, counterclaimed against the plaintiffs for damages for alleged misrepresentation.

Mr. Jenkins, K.C., and Mr. Manby appeared for the plaintiffs, and Mr. Upjohn, K.C., Mr. Butcher, K.C., and Mr. Sargant for the defendant.

The onus being upon the defendant, Mr. Upjohn, in opening the counterclaim, said the subject of the purchase which led to the case consisted of six shops on the ground floor and four floors above in one of the two important thoroughfares of Plymouth. The site was acquired by the Corporation of Plymouth in connexion with a scheme of street improvement. When these improvements were carried out this site was for sale, and was sold to Mr. E. Orgel, who was one of a little syndicate, the other members of which included Mr. F. J. Selmon and Mr. J. H. Vincent, an architect. These gentlemen were the plaintiffs in the case. When they acquired the site they proceeded to erect a building upon it, but did not employ any independent architect, Mr. Vincent acting as his own clerk of works in the erection of the building. It was begun in November, 1905, and substantially completed in June, 1906. Early in 1906, before the completion of the building, Mr. Bailey, the agent of the Sun Insurance Company, entered into negotiations for the first floor, but later on he and Mr. Vincent negotiated for the purchase by the Sun Insurance Company of the building. Mr. Vincent, said counsel, assured Mr. Bailey that the building was constructed of the best quality of material and after the best design, and upon that assurance, which was afterwards corroborated by a written guarantee, Mr. Bailey, on behalf of the Sun Insurance Company, bought the building. The learned counsel, while disclaiming any imputation against Mr. Vincent, charged that the material of which the building was constructed was bad. It was, he said, built of brick and stone, the brick being only 4½ in. thick, and the stone very thin. It was, however, to the composition of the brick that he traced the damage to the building. The bricks were not bricks burnt in the usual way, but manufactured by a gas company from their refuse, and so of very inferior quality. The learned counsel laid stress on what he described as the inaccuracy of Mr. Vincent's certificate. He said that the bricks which had been used were not made of ordinary brick clay, but of the refuse from a gas works, and much of the instability of the building was attributable to the use of that inferior material.

The learned counsel then went on to show by letters and other documents that the Corporation, finding first the gable end and afterwards the pediment supporting it insecure, ordered first that the gable should be strengthened, and when that was found insufficient that it should be removed and with it the pediment. At first the Insurance Company thought the defects in the building were caused by a heavy gale which occurred in the middle of March, but soon they discovered from cracks appearing over the building at large that the defects in the building were due to structural deficiencies.

Mr. Horace Porter, examined by Mr. Butcher, said he was an architect and acted for the Sun Insurance Company. He said it was necessary to take down the gable and pediment on the building in question, and that when he was instructed to examine the building on January 12 last he found that the side wall was out of plumb to the extent of three-fourths of an inch. He subsequently found cracks in the stone and plaster work. At first he was not able to discover the cause of the cracks. He gave instructions for the removal of the gable about March 13. On March 15 he obtained samples of the bricks and of the mortar and cement and sent them to Mr. Dibdin with instructions to analyse. He afterwards received Mr. Dibdin's report on the matter. On April 5 he again went over the building and the cracks appeared to him to be far more serious. On April 27 he surveyed the building with Mr. Ridge, who was a distinguished architect. They found that where the cement rendering was on the black bricks it was loose, but where it was on the red bricks it was quite firm. There was some sort of deposit in the cement from the black bricks. The cement adhered firmly to the red bricks, but not to the black bricks. On the west flank wall he noticed that the cement was cracked and the top bricks were loose and did not adhere to the mortar. On April 27 he noticed that the cracks in the front wall had extended, for there were cracks in the plaster in the interior walls. There was a crack through the balustrade over the shop at the Bedford-street end. There was also a crack in the balustrade over the window to the extreme right of the building. Having regard to the report he had received from Mr. Dibdin he was able to form an opinion as to what caused the cracks. He believed that a white powder had formed on the bricks in the wall and therefore each joint was slightly larger than it was when the bricks were originally laid. If they multiplied the crack by many courses of brickwork the crack would then become appreciable. The cracks he noticed in the front wall disclosed a very serious state of things, because he feared that the wall was becoming disintegrated. He attributed the cracks in the interior walls to the same cause. The wall at the back of the building leaned over towards the yard, which was not satisfactory. He had never had any experience of these black bricks before this and had never heard of such bricks before. It was not true to say of the building that the workmanship and materials were of the very best.

Cross-examined by Mr. Jenkins.

He believed these black bricks had more lime in them than the other bricks. Except with regard to the pediment and the black bricks he had no complaint to make about the building. He was instructed by the Sun Insurance Company to carry out his suggestion that the gable should be removed and new dormers put in. That would cost between 600*l.* and 700*l.* To remove the pediment would cost about 200*l.* He knew that the Sun claimed the right to repudiate the contract on the ground that their agent had been told that the building had been erected in a proper manner. In the face of that the Sun had spent some 700*l.* on the property.

The witness, in further cross-examination by Mr. Jenkins, said that the black bricks were unsuitable as a backing for the red ones, as owing to the difference in size of the bricks the courses would not be level. The effect of the exudation of

crystals from the black bricks or the consequent loosening from the mortar or cement would be to throw the whole building up.

Mr. Jenkins asked why not down?

The witness replied that it could not go down.

Mr. Jenkins: If it moved the whole building up you would get a kind of curve, would you not?—I think the front is a little out—a very little, about ½ in. It is not large.

Re-examined.

He considered the pediment dangerous, and it was taken down. He felt it shake at the passage of a tramcar in the street below.

Mr. Joseph Dibdin, analytical chemist, practising at Westminster, examined, said he was consulting chemist to the London County Council, and had had his attention drawn very much to the analysis of mortar and cement and building materials generally. The witness gave evidence as to analysing samples of the bricks and cement used in the building in question. He observed upon the cement an efflorescence or crystallisation which aroused his interest. He found that the deposit was clearly a sulphate compound. On analysing the black bricks he found in an old one 2·26 per cent. of this compound, and in a new one 7·63 per cent. That showed about three and a half times more in the new brick than in the old, and the inference was that the difference exuded from the old one and formed this crystalline deposit. It was quite clear to his mind that the effect would be to detach the brick from the cement. The witness said there were two processes in this regard—the one of crystallisation and the other chemical. In the first a propulsive force would be exercised to give space for the formation of the crystals which would separate the bricks from the mortar or cement. In the other the effect would be to disintegrate the lime of the mortar, to deprive it of cohesive power, the gritty particles only being left. It was the drawing of the moisture from the bricks that brought out the efflorescence.

Mr. Butcher: Although the amount of expansion caused by the exudation from each brick would be small, the cumulative effect where a large number of bricks were employed as in this wall would be very great?—Clearly.

Mr. Ridge, an architect, generally corroborated the evidence of Mr. Porter as to the effect of the use of the black bricks upon the structure and the resultant cracks in the wall.

Cross-examined.

He thought the cracks in the wall very serious. He was of opinion that the wall was disintegrated. It was distinctly unsafe.

Does that mean that the wall is going to fall down?—I will not commit myself as to what is going to happen.

Is it likely to fall down?—I will not go so far as that.

Is it unlikely to fall down?—Certainly not.

Do you think the defendant was justified in spending 700*l.* upon that wall?—I think it was necessary.

Mr. Wallace Elliott, an expert in building materials, gave evidence as to examining the walls on June 24, and found that in many cases there was no cohesion between the bricks and the mortar—in fact he had lifted the bricks in some cases by hand.

Mr. T. G. Taylor, a builder and contractor at Plymouth, said on December 14 last he inspected the pediment and formed the opinion that it was very dangerous. He advised Mr. Bailey to have it tied back to the roof, which was done. It was afterwards condemned by the officials of the Corporation, and witness carried out the work of pulling it down. He found it was necessary for the safety of the building that it should be pulled down.

This being the defendant's case on the counter-claim, Mr. Jenkins said that he would call his evidence before addressing his lordship on behalf of the plaintiffs.

Mr. J. H. Vincent, examined, said he was one of the plaintiffs and the architect of the building in question. He denied that he had ever said anything to Mr. Bailey as to the manner in which the building was erected, as to the materials of which it was composed, or as to the quality of the workmanship. On September 19 last Mr. Bailey, as agent of the Sun Fire Insurance Company, signed the contract for the purchase of the building for the price of 26,000*l.* without any guarantee of any sort. Witness denied that he had acted as the clerk of the works on the job, but said that he personally superintended the work.

Mr. Skardon and Mr. Selmon also gave evidence to the effect that no representation as to the quality of the materials or workmanship used in connexion with the building was made to Mr. Bailey before the contract was signed on September 19.

In the result his lordship held that the representation alleged by the defendant had not been proved, and he granted the plaintiffs a decree for specific performance of the contract, which meant the payment by the defendant to the plaintiffs of 20,000*l.*, with interest from September 29 last.

Judgment accordingly.

Patents of the Week.

APPLICATIONS PUBLISHED.*

13,866 of 1906.—J. BARDSLEY and A. J. ROSENTRETER: *Door Checks and Closers.*

This consists in the combination of a check cylinder containing the piston and piston rod, a double-ended lever pivoted at one end at a fixed point and at an intermediate point to said rod, a connecting rod pivoted at one end to the outer end of said lever and at its other end to a fixed point, a closing spring exterior to said cylinder and confined at one end, a rod extending through said spring and having a collar to engage the otherwise unconfined end of said spring, and pivotal means engaging said rod with the inner end of said lever beyond its pivot point whereby said end of said lever constitutes a short crank which while said lever is turning on its pivot operates on and is operated against by said rod and spring.

14,076 of 1906.—D. LAFFAN and W. C. BEAUMONT: *Jointing Devices for Securing Two Pieces together in Joinery Work, Waggon Building, and other purposes.*

This consists in jointing two pieces together by first making a circular hole or cavity in each of the two parts to be joined together in such a way that when the two parts are side by side the peripheries of the two holes intersect, an orifice being formed between the two holes of less width than the diameter of the respective holes and then inserting in these cavities a dowel piece of corresponding shape so as to interlock with the cavities and fasten the pieces together.

16,526 of 1906.—E. ATZROTT: *Device for Connecting the Lattice Bars with the Beams of Lattice Work.*

This relates to a device for connecting the lattice bars with the ties or beams of lattice work made of two halves, the distinguishing feature being that the bars, which rest in grooves or the like formed in the beams, are secured together by means of inserted pieces or any preferred form in such a manner that the inserted piece engages in grooves or the like formed in the bars whereby any movement of lattice bars in the direction of their longitudinal axes is prevented.

17,192 of 1906.—A. E. LUNDSTROM: *Gates.*

This relates to gates, and consists in the combination with vertical swinging gates and counterbalances of a cross bar, rollers at ends of said bar adapted to bear on the inner face of a downwardly projecting arm, legs pivotally attached to the lower part of said cross bar, approaches or inclines pivotally connected to said cross bar, and means such as a cord, chain, or the like, whereby said pivoted legs may be drawn out of their vertical position to permit the cross bar to be depressed and raised, and the gates opened or closed.

17,794 of 1906.—C. A. JONES: *Ladder Towers, Step Ladders, and the like.*

This relates to ladder towers, step ladders, and the like, and consists in a see-saw arrangement of the supports of the tower whereby they simultaneously and automatically adjust themselves to any inequalities of the ground upon which they are placed, and whereby also the operator can adjust the tower in a vertical position.

19,573 of 1906.—D. MCLEAN: *Arrangement for the Improvement of Up-draughts and the Minimising of Down-draughts in Chimneys and Ventilating Shafts.*

This relates to an arrangement or apparatus for improving the up-draught and minimising the down-draughts in chimneys and ventilating shafts, comprising the combination of a pot or flue, a swinging or pivoted canopy or casing adapted to surround the upper part of outlet of said pot or flue and to swing pivot or tilt in any direction, and one or more flat rings or annular discs mounted above said canopy or casing and preferably surmounted by a cap or cover.

20,489 of 1906.—D. CAMPBELL and R. GALLOWAY: *Parlour Grates, Stoves, and the like.*

This relates to a stove parlour grate or the like, and consists in providing an unattached lift-out damper frame supported upon a pressure boiler behind the fire adapted for being wedged at the front into its position by the removable cheeks and back of the fireplace, a lift-off damper adapted to fit and be moved upon the said frame, and a removable fire-back containing an aperture in its lower edge which affords access to the damper handle.

22,766 of 1906.—R. CHAMP: *Process of Galvanising Wire, Wire-netting, and similar articles.*

This consists in a liquid flux process of galvanising, consisting in first cleansing the article to be galvanised for about twenty minutes in the usual way, then passing it in a cold state through a solution containing from about 5 to 10 per cent. of hydrochloric acid, and then immediately immersing the article, while still wet with the solution, in a bath of molten zinc.

25,677 of 1906.—A. CRAIB: *Arrangement for Hinging Window Sashes.*

This relates to an arrangement for hinging window sashes, comprising in combination a crook or pintle and a sliding bolt, which latter is made with a cheek for retaining each in the "out" position, and also with a hole or socket for the reception of the pintle.

67 of 1907.—K. H. SCHULZ: *Device for Grooving Columns, Boards, Planks, and the like.*

This relates to a device for grooving columns, boards, planks, and the like, characterised by a frame resting on rollers, adjustable rollers, mounted in slots of the cross bars and their prolongations, and several adjustable plane irons arranged behind each other, the edges of which project one above the other.

533 of 1907.—E. RICHARDS: *Gutter Brackets.*

This relates to a gutter bracket to which a flat blade or stay provided with a spiked end and a transverse blade provided with holes for the reception of screws or the like are attached.

3,579 of 1907.—D. ANDERSON: *Pivot Joints for Latches and Stays for Doors, Gates, Windows, and like purposes.*

This relates to pivot joints for latches and stays for doors, gates, windows, and like purposes, and consists in providing the pivoted member with a spherical or ball projection on each face, said ball projection being supported by and mounted between two arched-like brackets, the brackets being so designed as to enable the joint to be readily adjusted by tightening the upper or outer arched-like bracket.

4,875 of 1907.—J. BASS: *Pulley Blocks.*

This relates to a sheave block, and consists in the combination with a U-shaped shell provided with integral lugs of an arm pivotally secured between said lugs, a gate block secured to said shell and projecting through an opening in said arm, a gate secured to said arm, and a spring-pressed plate serving as a latch to engage a slot in said gate block.

6,741 of 1907.—H. J. COLE: *Construction of Window Sash Fastener.*

This relates to the construction of window fasteners, and consists of a base plate carrying lugs, a sliding block situate in one of the lugs and carrying a pivoted cam, means for actuating the sliding block, such means either passing through the other lug or actuating a rod projecting from the sliding block and passing through the other block and screw-threaded holes in the sliding block for receiving a screw rod carrying a hook.

9,128 of 1907.—B. TURNER: *Combined Door Springs and Checks.*

This relates to combined door springs and checks, and consists in the employment of toothed gearing for either directly or indirectly communicating the motion of the door spindle to a drum in which the spring for effecting the closing of the door is arranged.

11,464 of 1907.—J. SHANKS: *Lavatory Basins and Water Supply Fittings therefor.*

This relates to lavatory basins and water supply fittings therefor, and particularly relates to lavatories mainly intended for school use in which a flush or flow of clean water is maintained while the basin is in use, and is designed to provide a construction in which water-supply fittings of simple and inexpensive form are readily secured to the ware to supply a pair of basins simultaneously and at such a point as to ensure flushing with clean water of the whole surface of each basin. The water-flushing pipe and spraying device are connected to the pair of basins. Two shallow basins are formed in the ware separated by a central division and having each a ledge or weir over which the flushing water passes to the discharge outlet, the final draining of the basin being effected through the usual drain holes. A water-supply pipe is carried through an orifice in the ware between the basins, where it may be readily coupled up underneath and is formed with a branch to each basin where it discharges in each corner in which is fitted a spraying plate so that the flushing water is directed in streams or jets over the comparatively flat bottom of the basin and thence over the weir. The basins are further so shaped as to facilitate this flushing-out action, each basin in front extending in a straight line from the water inlet and being thence surrounded or curved in a broad sweep towards the weir.

16,449 of 1906.—G. C. MARKS: *Concrete Pillars, Columns, Piles, and the like.*

This relates to a reinforced concrete pile having the shoe or point formed integral with metallic verticals trussed together by lattice work and wherein the metallic verticals and their extensions forming the point are formed of angle iron, the extensions of the verticals being tied together by cross bars, plates, or the like, and wherein the metallic structure with the exception of the shoe is wound round with wire or encased in a

PATENTS.—*Continued on page 66.*

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xvi. and xvii.; Auction Sales, xxviii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

* JULY 26.—**Rotherham.**—SCHOOL.—The Governors of the Municipal High School for Girls propose to erect new premises for a secondary school and pupil-teachers' centre for girls to accommodate 300. Premiums of 100*l.*, 50*l.*, and 25*l.* Architects desiring to submit designs should send their names to Spurley Hey Education Offices, Town Hall, Rotherham, on or before July 26.

NO DATE.—**Bristol.**—SCHOOL.—Bristol Education Committee invite designs for a new school on a site near Sefton Park-road, Ashley Hill, to accommodate 1,000 children. The competition will be restricted to Bristol architects. A plan of the site and printed particulars may be obtained from Mr. Wm. Avery Adams, Secretary to the Committee, Guildhall, Bristol.

Contracts.

BUILDING.

* JULY 13.—**Essex.**—SCHOOLS.—Builders desirous of tendering for erection of the East Thurrock Schools for the Essex Education Committee should send their names to Mr. C. M. Shiner, 110, Hamilton House, Bishopsgate-street Without, E.C., before July 13, when a selection will be made.

JULY 15.—**Belfast.**—FACTORY.—For proposed new factory, etc., York-road, Belfast, for the Belfast Mineral Water Company, Ltd. Bills of quantities can be obtained from Mr. Acheson Ferguson, quantity surveyor, 2, Wellington-place, Belfast, on payment of 2*l.* 2s. deposit. The plans and specification can be inspected at office of Mr. W. J. Moore, architect, 35, Royal avenue, Belfast.

JULY 15.—**Bournemouth.**—REFRESHMENT SHELTER.—Bournemouth T.C. invite tenders for the construction of refreshment shelter at Durley Chine. Full particulars, forms of tender, etc., can be obtained of the Borough Engineer, Mr. F. W. Lacey, at whose office drawings can be seen, provided that the sum of 1*l.* 1s. has been previously deposited with Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth.

JULY 15.—**Burmantofts.**—SHOEWORKS.—The extension of Stanley Shoeworks, Compton-road, Burmantofts, for Messrs. C. Davison & Sons, Ltd. Names and addresses to Mr. W. Mason Coggill, architect, 4, Airedale-terrace, Stourton, Hunslet.

JULY 15.—**Dromore.**—COTTAGE HOSPITAL ADDITIONS.—Additions to cottage hospital, Dromore, County Down. Plans and specification to be seen at offices of Messrs. Hobart & Heron, architects, 120-121, Scottish Provident-buildings, Belfast.

JULY 15.—**Edinburgh.**—UNDERGROUND URINAL.—Edinburgh Corporation invite tenders for the construction of an underground urinal at Albert-street, Leith-walk. Specification and schedule of measurement prepared by the Burgh Engineer, from whom schedule of quantities and all particulars may be obtained.

JULY 15.—**Leeds.**—CONVENIENCES.—Leeds Corporation invite tenders for the erection of ladies' conveniences at the Harehills Recreation Ground. All particulars may be obtained at the office of Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

JULY 15.—**Llwydcoed.**—VILLA.—The erection of a villa at Llwydcoed, Aberdare, for Mr. E. Moses. Drawings and specification may be seen, and bill of quantities obtained (on deposit of 1*l.* 1s.), at office of Mr. J. Llewellin Smith, M.S.A., architect, Aberdare.

JULY 15.—**Nantymoel.**—RENOVATING CHAPEL.—For renovating Bethel Congregational Chapel, Nantymoel, for the Church Committee. Plans and specifications to be seen at 12, Commercial-street, Nantymoel.

JULY 16.—**Bantry.**—ENTRANCE GATE, ETC.—Bantry R.D.C. invite tenders for the execution of works at the old churchyard burial ground. Mr. Richard Croly, Clerk of the Council, Board-room, Bantry.

* JULY 16.—**East Ham.**—STABLING, ETC.—The East Ham T.C. invite tenders for erection of stabling and ambulance house at the Isolation Hospital, in Roman-road, East Ham. For further particulars see advertisement in this issue.

JULY 16.—**London.**—SMOKING-ROOM.—Great Western Railway Directors invite tenders for an extension of the smoking-room and lavatory accommodation at the Great Western Royal Hotel, Paddington, W. Plans and specification may be seen, and forms of tender and bills of quantities obtained, at the office of the Engineer at Paddington Station, London.

JULY 16.—**Peny Bryn.**—HOUSES.—The erection of thirty dwelling-houses, together with boundary walls and other works, etc., at Peny Bryn, Brynmenyn, near Tondu, for the Brynmenyn Building Society. Plans and specifications can be seen, and full particulars obtained, at the office of Mr. J. Morris Williams, architect and surveyor, Blackmill, near Bridgend.

JULY 16.—**Truro.**—COLLEGE BUILDINGS.—Additions and alterations at the Truro College, Truro. Specifications, etc., may be seen by appointment with the head master, at the College, and also at the office of Mr. Sampson Hill, architect, Green-lane, Redruth.

JULY 17.—**Clackmarras, etc.**—BUILDINGS.—The mason, carpenter, and slater works of (1) new buildings at Ordhill, Clackmarras, and (2) alterations and repairs at Mains of Cotts. The plans and specifications may be seen with Mr. John Wittet, architect, Elgin.

JULY 17.—**Ipswich.**—STABLES.—The erection of new stables at the Sanitary Authority's yard, Wolsey-street. Plans, specifications, and conditions of contract at office of Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich.

JULY 17.—**West Burton.**—ALTERATIONS TO SCHOOL.—Alterations in school. Plans and specifications are now at Mr. Ramsden's, Schoolmaster, West Burton.

JULY 18.—**Cork.**—COTTAGES.—Cork R.D.C. invite tenders for building labourers' cottages and fencing plots of same, as per schedule, which may be obtained at office of Mr. John Cotter, Clerk of Council, Board-room, Workhouse, Cork. Plans and forms obtained from the Clerk on payment of 5s.

JULY 18.—**Cork.**—WALL.—Cork R.D.C. invite tenders for building wall to enclose additional plot to be added to Garrycloyne Burial Ground. Specification may be inspected at office of Mr. John Cotter, Clerk of Council, Board-room, Workhouse, Cork.

JULY 18.—**Cumberworth.**—SCHOOL.—An infants' school, boundary walls, and out-offices in connexion with the Cumberworth Church of England Schools. Drawings and specifications, etc., at offices of Messrs. John Kirk & Sons, architects, John William-street, Huddersfield.

JULY 18.—**Hereford.**—ADDITIONS TO HOTEL.—Additions to the Spread Eagle Hotel, Hereford (for the Alton Court Brewery Company, Ross). Plans and specifications at the offices of Messrs. Groome & Bettington, architects and surveyors, Palace-chambers, Hereford.

JULY 18.—**London.**—WORKS AT SCATTERED HOMES.—The Guardians of Mile End Old Town invite tenders for the execution of certain work at their scattered homes and at the workhouse: also for the supply of engineers' and boiler-house materials. Forms of tender and full particulars can be obtained upon application at the Guardians' Offices, Bancroft-road, Mile End-road, E.

JULY 18.—**Porth.**—HOTEL.—The Tynewydd Hotel, Porth, for Mr. T. Morgan, the Rhondda Hotel, Cymmer, Porth. Plans and specification may be seen, and bill of quantities obtained, at the offices of Mr. James T. Jenkins, architect and surveyor, Porth, Rhondda, on a deposit of 2*l.* 2s.

JULY 18.—**Stafford.**—HOSPITAL BUILDINGS.—Stafford Health Committee invite tenders for the erection of isolation hospital buildings. Plans and specification may be inspected at the office of, and bill of quantities obtained on application to, Mr. W. Blackshaw, Borough Engineer, Borough Hall, Stafford. A deposit of 1*l.* 1s. will be required for each bill of quantities.

JULY 18.—**Trelewis.**—VESTRY, ETC.—For building a vestry, with conveniences and boundary walls, at Trelewis, for the Trustees, English Baptist Connexion. Drawings and specification may be seen at the office of Mr. T. Edmund Rees, architect and surveyor, Garnant, Merthyr Tydfil.

JULY 19.—**Castle Eden.**—POLICE-COURT, ETC.—Tenders are invited for the erection of a new court and alterations to Castle Eden Police-station. Plans and conditions of contract may be seen, and bills of quantities obtained, at the County Surveyor's Office, Shire Hall, Durham.

JULY 19.—**Devonshire.**—SCHOOL WORKS.—Devon County Education Committee invite tenders for the following work at Council Schools:—Bow, new offices, etc., for boys, drainage, and ventilation; Colyton, alterations to the offices and drainage; Denbury, new cloak-room, alterations, and repairs; Meddon, near Hartland, new drainage, etc.; Elmscott, near Hartland, new drainage, etc.; Oreston, near Plymstock, new drainage, alterations to the offices, and other work; Sherford, new cloak-room, coal store, general repairs, and other work; Shute, repairs, ventilation, painting, drainage, etc.; Shaldon, near Teignmouth, alterations and additions; Welcombe, new drainage, etc.; Werrington, alterations and repairs. The drawings, specifications, and the conditions of contract may be seen at the respective schools.

JULY 19.—**Golcar.**—HOUSES AND SHOP.—Three houses and shop in Scar-lane, Golcar. Plans may be seen, and quantities obtained, at office of Messrs. P. Taylor & Co., architects, Milnsbridge.

JULY 19.—**Manchester.**—CONVENIENCES.—Manchester Parks Committee invite tenders for alterations of two sets of conveniences at Alexandra Park. Drawings may be seen, and specification and bill of quantities obtained, at the office of the City Architect, Town Hall, upon payment to the City Treasurer of 1*l.* 1s. Cheques payable to the order of "The Corporation of Manchester."

JULY 19.—**Whitehead.**—CHURCH.—The erection of a new church at Whitehead, for Rev. J. Hamilton Bennett, B.A. Bills of quantities may be obtained from Mr. S. C. Hunter, 2, Wellington-place, on payment of a deposit of 2*l.* 2s. Plans and specification may be seen at the office of Mr. W. D. R. Taggart, architect, 2, Wellington-place.

JULY 20.—**Coedpenmaen.**—CHURCH.—The erection of a church at Coedpenmaen, Pontypridd, for the Building Committee. Plans and specification can be seen, and bills of quantities obtained, at offices of Messrs. A. O. Evans, Williams, & Evans, architects, Post-office-chambers, Pontypridd.

JULY 20.—**Milltown.**—HOUSE OF RETREAT.—A new wing to the House of Retreat, Milltown, S.J. Bills of quantities may be obtained from Messrs. Mumby & O'Rourke, surveyors, 15, College-green, on lodgment of 2*l.* 2s.

JULY 20.—**Newton Bank and Middlewich.**—COTTAGES.—Winsford Industrial Co-operative Society, Ltd., invite tenders for the erection of two cottages at Newton Bank, and also separate tenders for the erection of a shop and cottage in Lewin-street, Middlewich. Plans and specifications may be seen at the office, 21, High-street, Winsford.

JULY 20.—**Roselucombe.**—PIGGERY, ETC.—A piggery and boiler-house at Roselucombe, in the parish of St. Buryan, in the occupation of Mr. Matthew Thomas. Conditions and specification are now at the Farm House at Roselucombe.

JULY 22.—**Dalton.**—RESIDENCE.—Works required in the erection of a detached residence in Fleming House-lane, Dalton. Names and addresses to Mr. Douglas Hall, architect, Fartown, Huddersfield.

JULY 22.—**Lisburn.**—SCHOOLS.—The erection of the William Foote Memorial Schools, in Seymour-street, Lisburn. Apply to the Rev. A. Egan, Methodist Manse, Lisburn, for plans and specifications.

JULY 22.—**Monmouthshire.**—SCHOOLS.—Monmouthshire Education Committee invite tenders for carrying out extensions, alterations, and repairs at the undermentioned Council Schools:—Earlswood, new Chepstow, erection of new class-room and other alterations; Mynyddbach, near Chepstow, asphalting playgrounds and repairs; St. Dials, Cwmbran, improvements to lighting and ventilation; Nantyglo, provision of folding partitions, fire-grates, and block-flooring; Mitchel Troy, Monmouth, erection of new class-room and alterations. Plans and specifications may be seen at office of Mr C. Dauncey, Secretary, County Council Offices, Newport, Mon., and (for the Nantyglo School only) also at the school.

JULY 22.—**Portgordon.**—SCHOOL ADDITIONS.—Mason, carpenter, plumber, slater, plasterer, painter and glazier works of additions and alterations to Portgordon Public School. Plans and specifications to be seen at the school, or with Mr. James Jamieson, architect, 77, High-street, Elgin.

JULY 22.—**Rowde.**—SCHOOL.—The erection of a non-provided Elementary School at Rowde, Wilts. Plans and specifications can be seen at the offices of the architect, Mr. A. J. Randell, Exchange-place, Devizes.

JULY 23.—**Upper Bangor.**—HOUSES.—Tenders are invited for the erection of a pair of semi-detached houses at Upper Bangor for Capt. Davies, Morannedd. Plans and specification may be seen at the office of the architects, Messrs. Richard Davies & Son, architects, Bangor.

JULY 24.—**Exmouth.**—REFUSE DESTRUCTOR, ETC.—Exmouth U.D.C. invite tenders for refuse destructor, sheds, etc., at Mudbank, Exmouth. The works will be let in four contracts. Drawings can be seen at the offices of the Council's Surveyor and Engineer, Mr. Samuel Hutton, and conditions, etc., obtained from him on the payment of a deposit of 1*l.* 1s. (by cheque) for each contract.

JULY 24.—**Hollingworth.**—SCHOOL.—The Administrative Sub-committee for the Ashton-under-Lyne and Stockport Unions' District invite tenders for the erection of a new elementary Council school on land adjoining Market-street, Hollingworth, to accommodate about 600 children. Plans and specifications may be seen, and quantities obtained, from the architect, Mr. C. T. Adshead, Leinster-chambers, St. Ann's-square, Manchester, on payment of a deposit of 2*l.*

* JULY 24.—**Tottenham.**—BOILER, ETC., HOUSE.—The Metropolitan Asylums Board invite tenders for erection of boiler-house and workshops at the North-Eastern Fever Hospital, St. Ann's-road, Tottenham, N. For further particulars see advertisement in this issue.

JULY 26.—**Brierfield.**—SCHOOL.—Lancashire Education Committee invite tenders for the erection of a new public elementary school at Brierfield, near Burnley, to accommodate 800 scholars. The plans may be seen, and bills of quantities obtained, at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston, by payment of a deposit of 2*l.*

* JULY 27.—**Canterbury.**—BOILER-HOUSE, ETC.—The Guardians of the Blean Union invite tenders for the builders' work in connexion with Contract Nos. 1 and 2, also the erection of a boiler-house, chimney-shaft, and boiler seating at the Workhouse, Herne Common, near Canterbury. For further particulars see advertisement in this issue.

JULY 27.—**Dunfermline.**—CONVENIENCES.—Dunfermline Corporation invite tenders for the erection of a public convenience in Guildhall-street. Detailed schedules may be had at the office of the Burgh Engineer, Kirkgate.

JULY 27.—**Ipswich.**—ADDITIONS, ETC., TO SCHOOL.—Ipswich Education Committee invite tenders for the execution of certain alterations of, and additions to, the premises of the Municipal Secondary School for girls in Bolton-lane, Ipswich. The plans and specification may be seen on application to the architect, Mr. T. E. Johns, of Tower-chambers, Tower-street, Ipswich, from whom a copy of the bill of quantities may be obtained on deposit of the sum of 1*l.* 1s.

JULY 27.—**Tenbury.**—CONCRETE WALL.—Tenbury Guardians invite tenders for the building of a concrete wall adjoining the River Teme. Specification and further particulars may be obtained from Mr. R. W. Jarvis, surveyor, Tenbury.

JULY 29.—**Muswell Hill.**—PUBLIC CONVENIENCE.—Hornsey T.C. invite tenders for the construction of an eight-stall underground public convenience at Muswell Hill. Particulars can be obtained on application to Mr. E. J. Lovegrove, Borough Engineer and Surveyor, at the Municipal Offices, Highgate.

JULY 30.—**Redditch.**—DESTRUCTOR BUILDINGS.—Redditch U.D.C. invite tenders for the erection of destructor buildings in Smallwood-street. Copies of specification, etc., may be obtained, and plans examined, on applying to Mr. Arthur J. Dickinson, Engineer and Surveyor, Council Offices, Redditch, and depositing 1*l.* 1s.

✱ AUGUST 6.—**Sheffield.**—POST-OFFICE.—The Commissioner of H.M. Works and Public Buildings invite tenders for the erection of a new head post-office at Sheffield. For further particulars see advertisement in this issue.

NO DATE.—**Broughton.**—CHURCH SCHOOLS.—New Church Schools, to be erected at Broughton. Plans can be seen, and all information obtained, from Messrs. Willink & Thicknesse, architects, 14, Castle-street, Liverpool.

NO DATE.—**Chatburn.**—WEAVING SHED.—For the erection of an extension to weaving shed and seventeen dwelling-houses at Chatburn, near Clitheroe. Quantities may be obtained on application to Mr. W. H. Atkinson, architect, Shaw-street, Colne.

NO DATE.—**Dungannon.**—COTTAGE.—Small cottage at Dungannon. Apply to Mr. H. Lundy, architect, 38, Dame-street, Dublin.

NO DATE.—**Knox.**—LODGE, ETC.—A lodge and entrance gates at Knox. For particulars apply Mr. T. Blackburn, 73, Westcliffe-terrace, Harrogate.

NO DATE.—**Llanishen.**—CHURCH EXTENSION.—Building the extension to the Parish Church of Llanishen, Glam. A deposit of 2*l.* 2s. Mr. H. Douglas Blessley, architect and surveyor, 22, Trinity-street, Cardiff.

✱ NO DATE.—**St. Leonards-on-Sea.**—SCHOOL.—The Committee of the Buchanan Hospital, St. Leonards-on-Sea, invite tenders for erection of new wing for children. For further particulars see advertisement in this issue.

ENGINEERING, IRON, AND STEEL.

JULY 15.—**Leeds.**—ELECTRIC LIGHTING.—The Sewerage Committee of the Leeds Corporation invite tenders for the supply, delivery, and erection at their Knostrop Sewage Works of one new small combined electric lighting set. Further particulars can be obtained on application at the office of Mr. Geo. A. Hart, Sewerage Engineer, Municipal Buildings, Leeds.

JULY 15.—**London.**—GIRDERS.—The Bengal and North-Western Railway Company Directors invite tenders for the supply and delivery of (1) six spans 100 ft. girders, (2) 37 tons paints, (3) metals (brass, copper, and zinc, various), as per specifications to be seen at the Company's offices, 237, Gresham House, Old Broad-street, London, E.C.

JULY 16.—**London.**—BRIDGE.—Great Western Railway Directors invite tenders for the supply of about 300 tons of steel bridge girders and other iron and steel work of British manufacture. Plans and specification may be seen, and forms of tender and bills of quantities obtained, at the office of the Engineer, at Paddington Station.

JULY 16.—**London.**—SLUICE GATES.—The Secretary of State for India in Council invite tenders for the supply of sluice gates, etc. The conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W.

JULY 16.—**London.**—STEEL TYRES.—The Board of Directors of the Southern Mahratta Railway Company, Ltd., invite tenders for 100 steel tyres for carriages and wagons, as per the specification and drawing, which may be seen at the offices of the Company, 46, Queen Anne's-gate, Westminster, S.W. The charge for each specification is 1*l.* 1s., which will not be returned.

JULY 17.—**Paisley.**—TANK.—Paisley Gas Corporation invite tenders for supplying and erecting an ammoniacal liquor (steel) tank at their works, Blackstoune-road. Specifications and forms of tenders may be had, and drawings inspected, on application to Mr. Geo. R. Hislop, Engineer and Manager, Paisley Gasworks.

JULY 17.—**Penistone.**—HEATING.—Penistone District Isolation Hospital Committee invite tenders for the heating apparatus of the two fever wards at the Isolation Hospital, Hoyland Moor, near Penistone, including the erection of the necessary boiler-house. Plans may be seen, and specifications obtained, at the office of Mr. J. Berry, 3, Market-place, Huddersfield.

JULY 18.—**Dundee.**—IRON FENCING.—Dundee Harbour Trustees invite tenders for the supply, delivery, and erection complete at the coal-hoist sidings, Dundee Harbour, of iron and wire fencing. Plans may be seen, and specifications obtained, at the office of Mr. J. Hannay Thompson, M.Inst.C.E., Harbour Engineer, Harbour Engineer's Office, Dundee.

JULY 19.—**Rhondda.**—ENGINE.—Rhondda U.D.C. invite tenders for a horizontal steam-engine and exhauster to pass 40,000 cubic ft. of gas per hour for their Ystrad Gasworks. Plans and specifications may be seen, and forms of tender obtained, upon application to Mr. Octavius Thomas, the Engineer and Manager, Gas and Water Offices, Pentre, Rhondda, upon depositing the sum of 1*l.* 1s.

JULY 19.—**Stockton, etc.**—BRIDGES.—Tenders are invited for (*a*) widening Londonderry Bridge, Stockton; (*b*) widening Crook Bridge; and (*c*) improvement of the Durham and Stockton main road at Holdforth Bridge, Sedgefield. Plans and specifications may now be seen, and bills of quantities obtained, at the County Engineer's Office, Shire Hall, Durham.

JULY 22.—**Billericay.**—WEIGHBRIDGE.—The Guardians of the Billericay Union invite tenders for the provision and fixing at their Workhouse premises of a weighbridge. Mr. C. Edgar Lewis, Clerk, Brentwood, Essex.

JULY 22.—**Castleford.**—BOILERS, ETC.—Castleford Education District Sub-Committee invite tenders for supplying and fixing new boilers and altering heating apparatus at Castleford, Temple-street, and Wheldon-lone provided schools. Specifications may be had from Mr. B. Leah, Education Office, Castleford.

JULY 22.—**Coventry.**—BRIDGE WORKS.—Coventry Corporation invite tenders for the removal of the superstructure of the existing brick bridge over the Coventry Canal on the Foleshill-road (Prince William Henry Bridge), and the construction of a new brick arch bridge. Plans, etc., may be inspected, and schedules of quantities and forms of tender obtained, on application at the City Engineer's Office after payment of 2*l.* 2s. has been made to the City Treasurer.

JULY 22.—**Darvel.**—WATERWORKS.—Darvel T.C. invite tenders for the work necessary to provide the Burgh with an extension to the waterworks. Drawings may be seen at the office of Mr. P. Campbell Hart, C.E., 134, St. Vincent-street, Glasgow, from whom copies of the specification and schedule of quantities may be obtained on payment of 1*l.*

JULY 22.—**Otterburn.**—BRIDGE.—Northumberland C.C. Bridges and Roads Committee invite tenders for the erection of Otterburn Bridge in masonry. Plans may be seen, and bills of quantities obtained, at the County Surveyor's offices, The Moot Hall, Newcastle-on-Tyne.

JULY 22.—**Rochester.**—TRAMWAYS.—Rochester Corporation invite tenders for the construction of permanent way (Contract No. 5) and overhead line (Contract No. 6). Specification, etc., can be obtained, and drawings can be seen, at the office of Mr. E. Rotter, A.M.Inst.C.E., Consulting Engineer, 47, Victoria-street, Westminster, on payment of a deposit of 5*l.*

JULY 22.—**Wakefield.**—ENGINES, ETC.—The Storthes Hall Asylum Sub-committee of the West Riding C.C. invite tenders for the following contracts in connexion with the second portion of the main institution of this asylum:—(1) Two engines and dynamos, electric light installation, including wiring, fittings, lamps, etc.; (2) electric bells, telephones, fire-alarms, recording clocks, etc.; (3) heating and ventilation; (4) farm buildings and residence. Full particulars may be obtained on application to the County Architect. A deposit of 1*l.* is required for each contract. Cheques, etc., must be made payable to the West Riding Treasurer, and sent to him direct at the County Hall, Wakefield.

JULY 23.—**Derby.**—FENCING.—Derby Corporation invite tenders for fencing and street works fronting "Parkfield Cedars," Kedleston-road. Plans and specification may be seen, and bill of quantities, etc., obtained, upon application at the office of Mr. John Ward, M.Inst.C.E., Borough Surveyor, Borough Surveyor's Office, Babington-lane, Derby.

JULY 23.—**Swansea.**—HEATING.—Heating Memorial Baptist Chapel, schoolroom, etc., Swansea, by hot water (low pressure). Mr. Gwilym Morgan, The Bryn, Terrace-road, Swansea.

JULY 25.—**London.**—ENGINES.—The Board of Directors of the Burma Railways Company, Ltd., invite tenders for the supply of four loco. tank engines with carriages for steam rail motor service. Specifications and forms of tender can be obtained at the Company's offices, 199, Gresham House, Old Broad-street, E.C. For each specification a fee of 1*l.* will be charged, which will not be returned.

✱ JULY 27.—**Canterbury.**—BOILERS, MACHINERY, ETC.—The Guardians of Blean Union invite tenders for the supply of two 14 ft. 6 in. by 4 ft. 6in. Cornish boilers, and steam piping to laundry and laundry machinery, as per schedule, at the Workhouse, Herne Common, near Canterbury. For further particulars see advertisement in this issue.

JULY 27.—**Dunbar.**—GROYNE.—Construction of a timber groyne on the beach at Dunbar, 380 ft. in length. Copies of contract and specification and bill of quantities may be had from Mr. Robert White, Town Clerk, Town Clerk's Office, Dunbar, on payment of 1*l.* 1s.

AUGUST 1.—**Manchester.**—PUMPING PLANT.—The Directors of the Manchester Ship Canal Company invite tenders for the supply, delivery, and erection at the locks at Mode Wheel, Barton, and Latchford, on the Ship Canal, of three sets of pumping plant. The drawings may be inspected, and copies of the specification and bill of quantities obtained, on a payment of 2*l.* 2s., at the office of the Chief Engineer (Mr. W. H. Hunter, M.Inst.C.E.), 41, Spring-gardens, Manchester.

AUGUST 3.—**Newcastle-on-Tyne.**—TRAMWAY JUNCTION.—The Tramways Committee of the Corporation invite tenders for the supply of various points, crossings, rails, and other materials in connexion with the renewal and extension of a three-road, double-turnout junction of tramways at Market-street and Pilgrim-street, Newcastle-upon-Tyne. On payment of 1*l.* 1s. to the City Treasurer, plans, schedule of quantities, and forms of tender, can be obtained at the City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

AUGUST 6.—**London.**—FENCING WIRE, ETC.—The Crown Agents for the Colonies, acting on behalf of the administration of the Central South African Railways, invite tenders for the supply of fencing wire and eye-bolts. Forms of tender and all particulars may be obtained on application at the office of the Crown Agents for the Colonies, Whitehall-gardens, London, S.W., on payment of a deposit of 10s.

MISCELLANEOUS.

JULY 15.—**Manchester.**—TERRA-COTTA.—Manchester Education Committee invite tenders for the supply of terra-cotta for the Southall-street Municipal School, Cheetham, Manchester. Plans may be seen, and a copy of the bill of quantities (including specification) may be obtained, at the offices in Deansgate, Manchester, on the deposit of 1*l.* 1s.

JULY 16.—**Cardiff.**—TELEPHONES.—Cardiff Guardians invite tenders for provision of telephones, necessary wiring, switchboard, etc., and alteration of present telephone service at their Cardiff and Ely Workhouses. Particulars and forms of tender may be obtained from Mr. Arthur J. Harris, Clerk, Union Offices, Queen's-chambers, Cardiff.

JULY 17.—**Enfield.**—CARTAGE.—The U.D.C. of Enfield invite tenders for the cartage of gravel. Specifications, with the estimated quantities to be carted on to each road, can be obtained on application to Mr. Richard Collins, the Council's Surveyor, at Public Offices, Enfield, Middlesex.

JULY 17.—**Poole.**—EMPTYING CESSPOOLS.—Poole B.C. invite tenders for the emptying of cesspools and closet pails. A copy of the contract to be entered into may be inspected at office of Mr. Charles Lisby, Town Clerk.

JULY 17.—**Rotherham.**—TIMBER.—Rotherham Guardians invite quotations for the supply of 200 tons of new timber, suitable for firewood purposes. Mr. W. C. Harrison, Clerk to Guardians, Union Offices, Rotherham.

JULY 19.—**Hull.**—SCAVENGING.—The Corporation of Kingston-upon-Hull invite tenders for the collection of nightsoil (not dry dust) in districts Nos. 5, 10, 11, 12, 13, 14, 18, and 19, for a period of one year. Specifications and a plan of the districts may be seen, and forms of tender obtained, on application to the Inspector of Nuisances, at his office, Hanover-square.

✱ JULY 20.—**Horsham.**—MATERIALS, ETC.—The Governors of Horsham Grammar School hereby invite tenders for works to be carried out at the school premises. For further particulars see advertisement in this issue.

JULY 20.—**Radcliffe.**—LIBRARY FURNISHING.—Radcliffe U.D.C. invite tenders for the furniture and fittings required for their new library. Specifications may be obtained on application to Mr. Henry Lord, F.R.I.B.A., architect, 42, Deansgate, Manchester, on deposit of 1*l.* 1s.

JULY 22.—**Wantage.**—STEAM ROLLING, ETC.—Wantage U.D.C. invite tenders for steam rolling and scarifying on the main roads. Forms of tender and full particulars can be obtained of Mr. Wm Hanson, Surveyor, Town Hall, Wantage.

JULY 29.—**Witham.**—STEAM ROLLER.—Witham U.D.C. invite tenders for the use, per day, of steam roller and scarifier, to include driver, flagman, and coal, at such times and places as the surveyor, Mr. W. P. Perkins, Witham, may direct.

✱ JULY 24.—**Kent.**—ROOFING, ETC.—The Metropolitan Asylums Board invite tenders for covering roofs with corrugated iron and carrying out repairs and painting at the Long Reach Small-pox Hospital, Dartford, Kent. For further particulars see advertisement in this issue.

JULY 30.—**Hoddesdon.**—STREET LIGHTING.—Hoddesdon U.D.C. invite tenders for lighting with gas the public lamps in the district. Further particulars may be obtained of the Surveyor, Mr. W. H. Flood, Council Offices, Hoddesdon.

NO DATE.—**Plymouth and Ivybridge.**—CARTAGE.—Cartage at per ton rate for about 100 tons per week, Plymouth to Lee Mills, Ivybridge, and 50 tons from the Mill to Plymouth. Address Messrs. John Henry & Co., Ltd., 6, Ludgate-square, London.

PAINTING, etc.

JULY 15.—**Barnstaple.**—COLOURING, ETC.—Barnstaple Education Committee invite tenders for certain colouring and painting to be done at the Holy Trinity Girls' School and the National Girls' School, North Walk. Specifications of the work can be obtained from the head mistress of either school.

JULY 15.—**Bradford.**—PAINTING.—Bradford Education Committee invite tenders for the inside painting and colouring of ten provided and thirteen not-provided schools. Specifications and forms of tender may be obtained at the Education Office (Buildings Department).

JULY 15.—**Brighton.**—REPAIRS, ETC.—Brighton Education Committee invite tenders for internal and external repairs, painting, etc., to certain of the schools, etc. The Committee also invite tenders for the installation of the electric light in the Pelham-street Council School. Specifications of the work may be seen, and forms of tender obtained, at the offices of the Surveyors to the Committee, Messrs. T. Simpson & Son, 17, Ship-street, Brighton.

JULY 15.—**Ebbw Vale.**—PAINTING.—Ebbw Vale Education Committee invite tenders for colouring the Pontygof Girls' and Infants' Schools during the Midsummer Holidays. Specification, etc., may be seen at the offices of the architect, Mr. Henry Waters, Market-chambers, Ebbw Vale, or at Waungoch, Beaufort.

JULY 15.—**Pudsey.**—RENOVATION OF CHURCH.—For renovation and decoration of St. Laurence's Church, Pudsey. Plans and specification at the church, and at the office of Messrs. Austin & Paley, architects, Lancaster. Bills of quantities may be obtained on application to Messrs. Wright & Son, surveyors, Lancaster.

JULY 16.—**Belfast.**—PAINTING.—For painting to be executed at May-street Church, Belfast. Specification can be seen at office of Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

✱ JULY 17.—**Cricklewood.**—CLEANING AND PAINTING.—The Directors of the Midland Railway Company invite tenders for cleaning and painting internally and externally of 136 houses, and externally 150 houses, and painting, etc., of station buildings at and between Chapel-en-le-Frith, Whatstandwell. For further particulars see advertisement in this issue.

JULY 17.—**Leeds.**—PAINTING, ETC.—Leeds Education Committee invite tenders for painting and cleaning of schools during the Midsummer vacation.

Particulars, etc., on application to the Architect's Department, Education Offices, or to Mr. W. Packer, Secretary, Education Offices, Leeds.

JULY 17.—**Stockton-on-Tees.**—PAINTING.—The Education Committee invite tenders for painting, etc., at the following schools: Bailey-street (including caretaker's house), Hume-street, Tilery-road, and Bath-lane. Specification may be seen, and form of tender obtained, at office of Mr. M. H. Sykes, Borough Engineer, Town Hall.

JULY 18.—**Wigan.**—PAINTING, ETC.—Wigan Education Department invite tenders for the painting, colouring, limewashing, etc., required at schools. Tenders are also invited for limewashing, etc., at other schools. A general specification and detailed particulars of the work required to be done may be obtained on application to Mr. John W. Horne, Secretary to the Education Committee, Education Offices, Wigan.

JULY 19.—**Great Yarmouth.**—PAINTING.—Great Yarmouth Education Committee invite tenders for painting the outside wood and iron work of St. George's, Northgate, and Runham Vauxhall Schools respectively. Tenders are also invited for washing and colouring the inside walls and varnishing match boarding at St. George's infant school, pupil teachers' centre, and cookery centre. Specifications and forms of tender may be obtained at the office of the Borough Surveyor, Town Hall, Great Yarmouth.

JULY 20.—**Eccles.**—PAINTING, ETC.—Eccles Corporation invite tenders for painting and decorating the Council Chamber and other rooms in the Town Hall, Eccles. Copy of specification can be obtained on application to the Town Clerk.

JULY 22.—**Handsworth.**—PAINTING, ETC.—The Education Committee of the U.D.C. of Handsworth invite tenders for the painting, etc., of exterior of Grove-lane school, out-buildings, and school-house, etc., and interior and exterior of Boulton-road schools, wood workshop, out-buildings, etc. Forms of tender, copies of specifications, etc., can be had upon application at the Education Offices, Soho Hill.

JULY 22.—**Stockton-on-Tees.**—PAINTING.—The Cemetery and Park Committee invite tenders for the painting, etc., at the Ropner Park and North End Recreation Ground. Specification may be seen, and form of tender obtained, at the Borough Engineer's Office, Town Hall.

★ JULY 24.—**Southwark.**—PAINTING.—The Borough Market Trustees invite tenders for repainting the Borough Market and offices, Southwark. For further particulars see advertisement in this issue.

JULY 26—**Hope.**—PAINTING.—The Guardians of the Salford Union invite tenders for the painting and whitewashing, etc., required at the Union Infirmary, Hope, Pendleton. Specifications and any information required may be obtained on application to the Steward at the Infirmary.

JULY 29.—**Midsomer Norton.**—REPAIRS, CLEANING, ETC.—The Trustees of the Wesleyan Church, Midsomer Norton, invite tenders for certain works of repairs, cleaning, and relighting. Plans and specifications may be seen at office of Mr. William F. Bird, C.E., architect and surveyor, Midsomer Norton.

★ AUGUST 1.—**Southwark.**—PAINTING, ETC.—The Southwark Guardians invite tenders for (1) internal repairs and cleaning down; (2) external painting, etc.; (3) roof repairing and painting, at the Infirmary, East Dulwich-grove, S.E. For further particulars see advertisement in this issue.

NO DATE.—**Cardiff.**—PAINTING.—Cardiff Education Committee invite tenders for painting the Court-road Council school, and 28 and 29, The Parade, Cardiff. Specifications can be obtained from the Director of Education, City Hall, Cardiff.

NO DATE.—**Shipley.**—REDECORATING, ETC.—The Governors of the Salt Schools, Shipley, invite tenders for redecorating the Victoria Hall, repainting the outside wood and ironwork of the Institute, the High Schools, and forty-two cottages. Specifications may be obtained on application to Mr. William Fry, Secretary.

ROADS, SANITARY, AND WATER WORKS.

JULY 13.—**Marple.**—STREET WORKS.—Marple U.D.C. invite tenders for the making-up of Possett Bridge-road. Drawings, etc., may be seen, and forms of tender and quantities (price 1*l.* 1s. each) obtained, from Mr. Fred H. Bancroft, A.M.Inst.C.E., F.S.I., 88, Mosley-street, Manchester.

JULY 16.—**Musselburgh.**—ROAD WORKS.—The T.C. of Musselburgh invite tenders for the construction of a macadamised road, laying channels, and cement concrete paving in a private street within the burgh. Schedules of measurements may be had from the Burgh Surveyor.

JULY 17.—**Ballybay.**—SEWERAGE.—Castleblayney R.D.C. invite tenders for carrying out sewerage works. Specifications prepared by Mr. Francis Bergin, B.E., 36, Westmoreland-street, Dublin, which can be seen at office of Mr. Bernard Coyle, Clerk to the Council, Board-room, Workhouse, Castleblayney.

JULY 17.—**Barrow-in-Furness.**—STREETS.—The Corporation invite tenders for the construction of the back street, between Church-street and back Strand, extending from back Ramsden-street to Albert-street. Bills of quantities may be obtained on application at the Borough Engineer's Office, Town Hall.

JULY 17.—**Kilrenny.**—WATER SUPPLY.—The T.C. of the Burgh of Kilrenny invite tenders for the construction of filters and clear-water storage tank, etc. Drawings may be seen, and copies of schedule and specification may be obtained, at the office of Mr. G. Somervel Carfrae, C.E., 1, Erskine-place, Edinburgh, on payment of 1*l.*

JULY 17.—**Leith.**—PAVING STREETS.—Leith Corporation invite tenders for street works. Plans and specifications of works may be seen, and information obtained, at the Burgh Surveyor's Office, Charlotte-street.

JULY 17.—**Rathdown.**—ROAD WORKS.—Rathdown No. 1 R.D.C. invite tenders for the following works, in accordance with the specifications and plan prepared by Mr. R. M. Butler, A.M.Inst.C.E., 12, Dawson-street, Dublin, and which can be seen at the Clerk's Office, Loughlinstown:—(1) Making of road, sewers, footpaths, etc., at Dean's Grange; (2) repairs to labourers' cottages, etc., at Balally, Dundrum.

JULY 17.—**Sefton.**—ROADS.—Sefton R.D.C. invite tenders for the reconstruction of roads in the Township of West Derby Rural. Specifications may be seen at the Clerk's office, or at the residence of Mr. Pool, surveyor, 3, Dewey-avenue, Melling-road, Aintree.

JULY 17.—**Stocksbridge.**—STREET WORKS.—Stocksbridge U.D.C. invite tenders for private street works in Victoria-street, Stocksbridge. Specifications to be had on application from Mr. J. Marsden, Clerk to the Council, Council Offices, Stocksbridge.

JULY 18.—**Castleford.**—PAVING.—Castleford U.D.C. invite quotations for labour only in taking up and relaying a portion of Wilson-street, Castleford. Full particulars on application to Mr. W. Green, Surveyor to the Council.

JULY 18.—**Coulsdon.**—STREET WORKS.—Croydon R.D.C. invite tenders for the execution of private street works in Fairdene-road and Red Down-road, Coulsdon. Plan, section, and specification, prepared by the Council's Surveyor, Mr. R. M. Chart, F.S.I., can be inspected, and forms of tender obtained, at his office, Town Hall, Croydon, on payment of 2*l.*

JULY 18.—**Edinburgh.**—STREET WORKS.—Edinburgh Corporation invite estimate for work on the carriageways of streets. Schedules of quantities and specifications may be obtained on application to the City Road Surveyor, City Chambers.

JULY 18.—**Southend-on-Sea.**—MAKING-UP.—The Corporation invite tenders for the making-up of streets. Plans, etc., may be seen, and bills of quantities obtained (on deposit of cheque for 1*l.* 1s.), upon application to Mr. E. J. Elford, M.Inst.M.E., Borough Engineer.

JULY 19.—**Down.**—SEWAGE WORKS.—Down District Lunatic Asylum Committee of Management invite tenders for sewage purification works to be constructed at the Asylum. The drawings and specification for the works may be seen at the Asylum.

JULY 19.—**Liskeard.**—SEWER.—Liskeard R.D.C. invite tenders for laying about 150 ft. of new 8-in. stoneware pipe sewer, at Crow's Nest, in the Parish of St. Cleer. Mr. Edwin Mallett, Sanitary Inspector, Pendruffle, Duloe.

JULY 19-22.—**Oulton Broad.**—MAIN DRAINAGE.—The U.D.C. of Oulton Broad invite tenders for Main Drainage Works. The drawings, etc., may be inspected at the offices of Mr. Nicholson Lailey, M.Inst.C.E., 53, Victoria-street, Westminster, upon a deposit of a 10*l.* Bank of England note.

JULY 20.—**Horsham.**—WORKS AT SCHOOL.—The Governors of Horsham Grammar School invite tenders for the works to be carried out at the School premises. Particulars, plans, and specifications can be seen at the office of Mr. G. B. Simpson, 4, Carfax, Horsham.

JULY 22.—**Lough Swilly.**—SLUICES.—For the removal of portion of existing sea embankment and of tidal sluices, etc., at Inch Level Intake, Lough Swilly, Co. Donegal, and the construction and completion of proposed new tidal sluices and embankment, for the Hon. T. A. Brassey. Drawings and specification may be seen at office of Mr. J. J. S. Barnhill, A.M.Inst.C.E., 1A, Strand, Londonderry.

JULY 22.—**Wandsworth.**—MAKING-UP.—The Council of the Metropolitan Borough of Wandsworth invite tenders for the making-up and paving of part of Hillside-road, Streatham. The specification and drawings may be seen, and forms of tender and schedule obtained, at the surveyor's office, 215, Balham High-road, S.W.

★ JULY 22.—**Wood Green.**—NEW ROAD.—Tenders are invited for constructing a new road at Wood Green, N. For further particulars see advertisement in this issue.

JULY 23.—**Croydon.**—STREET WORKS.—Croydon B.C. invite tenders for the repair of Magdala-road, within the Borough. Plans and specification of the required works may be seen, and forms of tender obtained, on application at the Borough Road Surveyor's office, Town Hall, Croydon.

★ JULY 23.—**Ealing.**—MAKING-UP ROAD.—The T.C. of the Borough of Ealing invite tenders for the making-up of Durham-road. For further particulars see advertisement in this issue.

★ JULY 23.—**Ealing.**—WOOD PAVING.—The Ealing T.C. invite tenders for repair of wood paving within the district. For further particulars see advertisement in this issue.

JULY 23.—**Wealdstone.**—MAKING-UP.—Wealdstone U.D.C. invite tenders for the execution of the necessary works in connexion with the making-up and providing proper means for lighting Frognal-avenue and Thomson roads in their district. Plans, etc., may be seen, and bills of quantities, forms of tender, etc., can be obtained, from Mr. Herbert Walker, C.E., the Surveyor, Council Offices, Wealdstone, on payment of 1*l.* 1s. in respect of each road.

JULY 24.—**Harlow.**—PIPE-LAYING.—The Directors of the Herts and Essex Waterworks Company, Ltd., invite tenders for the laying of about 4,500 yds. of 9-in. and 5,400 yds. of 4-in. and 3-in. internal diameter cast-iron socket pipes. The specification and plans may be inspected, and forms of tender may be had, on payment of the sum of 2*l.* 2s., on application at the office of the Company at Harlow, or at the office of Messrs. T. & C. Hawksley, civil engineers, 30, Great George-street, Westminster, S.W

JULY 24.—**Machynlleth.**—SEWERAGE.—Machynlleth U.D.C. invite tenders for the construction of about 3,455 yds. of stoneware and cast-iron pipe sewers, etc. The plans may be inspected at the offices of the engineers, Messrs. Sidney R. Lowcock & Phelps, 50, Queen Anne's-gate, Westminster, S.W., and Temple-courts, Temple-row, Birmingham, or at the Offices of the Council, Machynlleth. Copies of the specification, bills of quantities, and form of tender may be obtained on application at the offices of the engineers on payment of the sum of 5*l.* 5s.

JULY 25.—**Wivelsfield.**—SEWERAGE WORKS.—Chailey R.D.C. invite tenders for sewerage works for North Wivelsfield. The drawings, etc., may be seen at the office of Messrs. Powell & Co., estate offices, Lewes, from whom copies of the bills of quantities, specification, and forms of tender may be obtained on payment of the sum of 1*l.*

AUGUST 10.—**Port Talbot.**—SEWERAGE.—Margam U.D.C. invite tenders for the construction of Port Talbot Sewerage. The drawings may be seen, and copies of the specification, form of tender, and schedule of quantities may be obtained, on application to Messrs. William Fox & F. W. LaTrobe Bateman, 5, Victoria-street, Westminster, S.W., on payment of a deposit of 10*l.*

AUGUST 12.—**Neath.**—YSTRADFELLTE RESERVOIR.—Neath R.D.C. invite tenders for the construction of the reservoir embankment and works in connexion therewith for the formation of a reservoir on the River Dringarth, about nine miles from the Hirwain Railway Station, between Neath and Aberdare. The drawings may be seen, and specifications, etc., and form of tender obtained, at the offices of the engineers, Messrs. G. H. Hill & Sons, 3, Victoria-street, Westminster, and Albert-chambers, Albert-square, Manchester, upon payment of the sum of 5*l.* A representative of the engineers will point out the position of the intended works on July 16.

STONE, MATERIALS, AND STORES.

JULY 15.—**Edinburgh.**—ELECTRICITY CABLES.—Edinburgh Corporation invite tenders for the supply of lead-covered paper-insulated copper cables for electricity supply conductors. The specification and form of tender can be obtained from Mr. Frank A. Newington, Engineer, Electricity Supply Station, Dewar-place, Edinburgh, on payment of a deposit of 2*l.* 2s.

JULY 16.—**Mitcham.**—GRANITE SPALLS.—Holborn Guardians invite tenders for the supply of 600 tons of hard blue Guernsey granite spalls, to be delivered as required to their Workhouse, Western-road, Mitcham, Surrey. Mr. J. Allan Battersby, Clerk to the Guardians, Holborn Union Offices, No. 53, Clerkenwell-road, E.C.

JULY 16.—**Rochester.**—ROAD METAL.—Rochester Corporation invite tenders for the supply of broken Quenast, Guernsey, or Aberdeen granite, broken Cherbourg quartzite, etc. Specification and form of tender can be obtained on application to Mr. William Banks, A.M.Inst.C.E., City Surveyor, Guildhall, Rochester.

JULY 17.—**Enfield.**—GRANITE.—The U.D.C. of Enfield invite tenders for the supply of 2,200 tons (more or less) of hand-broken Clee Hill Dhu or best blue Guernsey granite, and 1,450 tons (more or less) of broken Leicestershire or other approved granite. Forms to be obtained only of Mr. Richard Collins, the Council's Surveyor, Public Offices, Enfield, Middlesex.

JULY 17.—**Enfield.**—GRAVEL.—The U.D.C. of Enfield invite tenders for the supply of 750 tons of coarse screened Hertfordshire or other approved gravel. Mr. T. W. Scott, Clerk to the Council, Public Offices, Enfield, Middlesex.

JULY 17.—**Hendon.**—DEAL ENDS.—Hendon Guardians invite tenders for the supply of 20 fathoms of best yellow deal ends, delivered free of charge to their Workhouse, near Edgware. Mr. F. J. Seabrook, Clerk to the Guardians, Union Offices, Edgware.

JULY 18.—**Devonport.**—STORES.—Devonport Electricity Department invite tenders for the supply of general stores for a period of twelve months. Particulars and form of tender may be obtained at the office of the Borough Electrical Engineer, Newport-street, East Stonehouse.

JULY 20.—**Bedwellty.**—LIMESTONE.—The U.D.C. of Bedwellty invite tenders for limestone. Forms of tender may be obtained from the Council's Surveyor, Mr. J. H. Lewis, A.M.Inst.C.E., Blackwood, Mon.

JULY 20.—**Leeds.**—GAS OIL.—Leeds Corporation Gas Committee invite tenders for the supply of 2,000 tons of gas oil for the manufacture of carburetted water gas. Specification and conditions of tender may be obtained on application to Mr. R. H. Townsley, General Manager, Gas Offices, East-parade, Leeds.

JULY 22.—**Tonbridge.**—GRANITE.—Tonbridge U.D.C. invites tenders for 1,000 tons of granite. Further particulars and forms of tender may be obtained on application to Mr. W. Laurence Bradley, C.E., the Council's Surveyor, at his office, Tonbridge Castle, Kent.

JULY 24.—**Leeds.**—ARTICLES.—Leeds Street Lighting Committee invite tenders for supply of the following articles for the ensuing year:—Lamp pillars, lamp furniture, pillar lamp irons and carriages, wall bracket irons, sheet copper and copper tops for lamps, glass for lamps, etc. Further particulars and forms of tender may be obtained on application to the Superintendent of Street Lighting, Springwell-street Depôt.

JULY 24.—**Wanstead.**—STONE.—Wanstead U.D.C. invite tenders for 2,200 tons (more or less) of Guernsey granite or Quenast stone. Forms of tender may be obtained on application to the Surveyor, at the Council Offices.

JULY 25.—**Greenwich.**—GRANITE SPALLS.—Greenwich Guardians require at Grove Park Workhouse, Lee, a cargo of about 350 tons Channel Island granite spalls for stone-breaking. Forms of tender can be obtained on application at the Clerk's office, Woolwich-road, Greenwich.

JULY 27.—**Dublin.**—STORES.—The Directors of the Cavan and Leitrim Railway Company, Ltd., invite tenders for supplies for period ending August 1, 1908. Forms to be obtained from the Secretary on prepayment of a fee of 1s. for each form, 37, College-green, Dublin.

NO DATE.—**Queenborough.**—ARTICLES.—Wanted, about 200 tons 85 lb. per yard double-headed metals, ten pairs of points and crossings, ten pairs of point levers, 3,000 sleepers, 5,300 chairs (various), 5,300 keys (oak), 16,000 trenails, 16,000 spikes, etc. Offers to be sent to the Queenborough Cement Company, Ltd., Queenborough, Kent.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*EVENING LECTURER, ADVAN. AND HNRS. BLDG. CONS.	Gvnrs. of the Hackney Inst.	1l. 5s. per evening	July 17
*CLERK OF WORKS	Metro. Borough of Shoreditch	3l. 3s. per week	July 18
*TEMPORARY CLERK OF WORKS	Ilford U.D.C.	3l. 13s. 6d. per week	July 23

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*FREE. BLDG. LD., W. CROYDON—At the Wheatsheaf H., Thornton Heath Pond, Lnd.-rd.	Douglas Young & Co.	July 17
*FREEHOLD BUILDING LAND, BERKS—At the White Hart Hotel, Blackwater	Notley & Co.	do.
*FREEHOLD PREMISES, No. 8, NEWGATE-STREET—At the Mart	Fox & Bousfield	do.
*FREEHOLD RESIDENTIAL PROPERTY, HARROW—At the Mart	Fox & Bousfield	do.
*FREEHOLD OF STONE HOUSE, WANDSWORTH-COMMON—At the Mart	Fox & Bousfield	do.
*BUILDERS' IRONMONGERY, ETC.—At 36, High-street, Highgate, N.	J. T. Skelding	July 22
*FREEHOLD PROPERTIES AND WATER SHRS., WOKINGHAM—Town Hall, Wokingham	James Watts	July 23
*TIMBER, WD.-WORK, MACHINERY, BLDR'S. STCK., WANDSWORTH—On the Premises	H. W. Smith	do.
*LEASE OF PREMISES, WANDSWORTH—135, High-street	H. W. Smith	do.
*FREEHOLD BUILDING PLOTS, PECKHAM-RYE—At the King's Arms Hotel, Peckham-rye	Worsfold & Hayward	July 24
*FREEHOLD, THE ELMS AND EAGLE HOUSE, FORE-ST., EDMONTON—At the Mart	Stanley Parkes & Brown	do.
*BUILDER'S IRONMONGERY, ETC.—At No. 21, Crawford-street, W.	H. W. Smith	July 25
*BUILDER'S STOCK AND PLANT—At Grove Works, Manbey-road	J. T. Skelding	do.
*BRICK-MAKING PLANT, ETC., CANTERBURY—The Mart, St. Margaret's-street	Frank Amos	July 27
*BARGES, PLANT, MACHINERY, ETC.—At Victoria Brickfields, Faversham	Wheatley, Kirk, Price, & Co.	July 30-31
*FREEHOLD PROPERTY, EASTBOURNE—At the Town Hall, Eastbourne	Joseph Stower	July 31
*FREEHOLD GROUND RENT, SHEERNESS—Tower's Hall, High-street, Sheerness	Tuckett & Son	Aug. 1
*FREEHOLD ESTATE, LLANDRINDOD WELLS—At Llandrindod Wells	Knight, Frank, & Rutley	Sept. 3
*STOCK OF BUILDERS' MERCHANT, HAMPSTEAD-ROAD, N.W.	J. T. Skelding	No date.

PATENTS.—*Continued from page 62.*

net-like binding formed from bars, metal sheets, mesh work, or the like, and wherein the shoe is neither encased with concrete nor wound round with wire or other net-like binding, and wherein the upper ends of the verticals are made integral with or secured to inclined extensions wound round with wires or not.

18,178 of 1906.—W. H. BROWN: *Reinforcement of Concrete Structures.*

This relates to reinforced concrete structures with a series of straight bars in the tensional areas of the structure and a curved bar in the same vertical plane as each of said straight bars extending from the compressional to the tensional areas, which bar is arranged so that its upper curves always pass over and through the junctions of the beams, girders, or floors, with the columns supporting the same or into a supporting wall, while the centre of its lower curve is equidistant from the point of support and is a sufficient distance from said straight bar in the same plane to secure a thickness of concrete which will give adequate cohesion between said bars and the concrete.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. The Editor cannot undertake to read and consider articles offered for acceptance unless they are type-written.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

June 25.—By LEE & FARR (at Slough).

Slough.—11, High st., f., y.r. 38*l.*	£500
36, 38, and 40, Chandos-st., f., w.r. 38*l.* 15s.	400
70, 72, 74, and 76, Wellington-st., f., w.r. £57 4s.	780
Farnham Royal Estate, twenty-five plots of land, f.	1,510

June 27.—By LACY, SCOTT, & SONS (at Suffolk).

Rattlesden, Suffolk.—High Town Green Farm, 293 acres, f.	2,160

By BALLS (at Sudbury).

Pebmarsh, etc., Essex.—Five farms, eighteen cottages, and land, 312 a. 3 r. 22 p., f.	£6,365

June 28.—By H. F. RUSSELL & SON (at Leominster).

Leominster, Herefordshire.—The Upper Hyde Estate, 115 a. 2 r. 23 p., f.	3,300
Small holdings, 14 a. 0 r. 2 p., f.	595

July 1.—By FURBER.

Camden Town.—12, Rochester-ter., u.t. 36¼ yrs., g.r. 6*l.*, y.r. 45*l.*	420

By PERCIVAL HODSON.

Palmers Green.—14, Ulleswater-rd., f., e.r. 45*l.*	520
Pinner.—3, Rose-cottages, f., w.r. 20*l.*	270

By HUNTER & HUNTER.

Battersea.—Park-rd., f.g.r. 20*l.*, reversion in 22 yrs.	600

By MAY & ROWDEN.

Regent-street.—No. 287, u.t. 14½ yrs., g.r. 76*l.* 7s., y.r. 135*l.*	1,525

By ALEX. MOSSMAN.

East Bedfont, Middlesex.—1 to 5, Vine-cottages and 3 a. 2 r. 29 p., f.	1,370
Manor House Farm and 21 a. 0 r. 14 p., f.	3,360

By WOODS & SNELLING.

Peckham.—96 and 98, Brayard-rd., u.t. 68¾ yrs., g r. 5*l.*, w.r. 80*l.* 12s.	500
Hounslow.—Sutton-av., freehold land, 3 a. 1 r. 22 p.	850

July 2.—By PERCY H. CLARKE.

Brixton.—100 to 106 (even), Holland-rd., u.t. 15 yrs., g.r. 21*l.*, y.r. 122*l.*	500
Streatham.—Buckleigh-rd., l.g. rents 27*l.* 6s., u t. 72 yrs., g.r. 3*l.*	460
Buckleigh-rd, l.g. rents 25*l.* 4s., u.t. 72 yrs., g.r. 3*l.*	420
Tankerville-rd., l.g. rents 18*l.*, u.t. 72 yrs., g r. 2*l.*	300

By DEBENHAM, TEWSON, RICHARDSON & CO.

City.—Old Broad-st., The Church of St. Peter-le-Poor, freehold site and fabric area 4,200 ft.	96,000

By DIXON & CO.

Sutton, Surrey.—19, Orchard-rd., u.t. 93 yrs., g.r. 4*l.* 10s.	200

By FAREBROTHER, ELLIS & CO.

Lambeth.—30 to 46 (even), Stangate-st., also l.g. rents 73*l.* 13s., u.t. 50 yrs., g.r. 75*l.*, y.r. 336*l.*	3,310

By WALTON & LEE.

River, Kent.—Kearsney Abbey and 23 a. 3 r. 12 p., f.	7,500

By GEO. LOVEITT & SONS (at Coventry).

Coventry.—1 to 31, Primrose-hill-st., f., w.r. 323*l.* 5s. 4d.	5 750

By WAINWRIGHTS & HEARD (at Castle Cary).

Alford, Somerset.—Portions of the Alford estate, 725 acres, f. (in lots)	23,652

By FLEURET, SONS & ADAMS (at Mason's Hall Tavern).

Farringdon-road.—98 and 104, Farringdon-rd., (s.), u.t. 62 yrs., g.r. 25*l.*, y.r. 115*l.*	1,200

July 3.—By H. E. FOSTER & CRANFIELD.

Peckham Rye.—"The Birches," f.g.r. 8*l.* 5s., reversion in 26 yrs.	240

By ELLIS & PALMER.

West Hoathly, Sussex.—"Fair Bank," 89 a. 1 r. 10 p., f.	5,000

By E. HUGH HENRY.

Finsbury.—63, Whitecross-st. (s.), f., y.r. 30*l.*	425
Clapham.—Park-hill, West Lodge, f., p.	1,175

By MONTAGU HOLMES & SON.

Camden Town.—2, Grange-st., f., y.r. 22*l.*	270
19 to 23, Grange-st., f., y.r. 100*l.* 11s.	1,350
279, Edgware-rd. (s.), u.t. 21 yrs., g.r. 15*l.* 15s., y.r. 120*l.*	1,000
Kilburn.—56 to 64 (even), Percy-rd., u.t. 172 yrs., g.r. 36*l.*, y.r. and w.r. 206*l.* 16s.	1,175

By JAMES MOORE & CO.

Stoke Newington.—2, Woodland-rd., u.t. 59 yrs., g.r. 4*l.* 15s., e.r. 32*l.*	£290
Canonbury.—15, Laconfield-rd., u.t. 42¼ yrs., g.r. 5*l.* 10s., e.r. 36*l.*	265
Stoke Newington.—21, Park-st., u.t. 61 yrs., g r. 5*l.* 5s., e.r. 32*l.*	290

By RUTLEY, SON, & VINE.

Hampstead-road.—12, Ampthill-sq., u.t. 36 yrs., g.r. 12*l.*, p.	600

By BAXTER, PAYNE, & LEPPER.

Beckenham.—Mackenzie-rd., f.g.r. 24*l.*	480
Birkbeck-rd., f g.r. 24*l.*	480
Woolwich.—Ordnance-rd., f.g.r. 12*l.*, reversion in 50 yrs.	235
Ladywell.—Prospect-pl. and f.g.r. 80*l.*, reversion in 71 yrs.	1,600
Plumstead.—77 and 79, Station-rd., f., w.r. 52*l.*	450
87, 89, 91, and 93, Durham-rd., u.t. 62 yrs., g.r. 13*l.*, w.r. 93*l.* 12s.	550
Croydon.—73, George-street (s.), f., y.r. 175*l.*	3,500
77, George-st. (s.), f., y.r. 175*l.*	3,500
Putney.—20, Stanbridge-rd., u.t. 67 yrs., g.r. 5*l.* 15s., e.r. 32*l.*	250
22, 24, 26 and 28, Stanbridge-rd., u.t. 33 yrs., g.r. 23*l.*, p.	895
5, 7, 9, and 11, Wymond-st., u.t. 67 yrs., g r. 24*l.*, y.r. 96*l.*	985
Clapton.—Downs-pk.-rd., f.g.r. 20*l.*, reversion in 53 yrs.	470
Chelsfield, Kent.—Cromwell Cottage, farm, etc., 5 a. 3 r. 25 p., f.	910
Croydon.—The Crescent, Oxford House, f., y.r. 55*l.*	650
Marylebone.—2, Spanish-pl., u.t. 5 yrs., g.r. 80*l.*, y.r. 140*l.*	240

July 4.—By GEO. BILLINGS.

Hackney.—79, North-st. (s.), u t. 47 yrs., g r. 5*l.* 10s., g.r. 32*l.*	258
228, 230, 232, and 234, Wick-rd., and 1, Selman-st., f., w.r. 135*l.* 4s.	1,145

By FULLER & FULLER.

Loughborough Junction.—1, Northway-rd., u.t. 66 yrs., g.r. 5*l.* 10s, w.r. 41*l.* 12s.	235

By C. C. & T. MOORE.

Whitechapel.—60 and 61, Great Prescot-st. and 44 and 46, St. Mark-st., f., y.r. 115*l.*	2,500
St. Georges-in-the-East.—1, St. George-st. (p.h.) and 3 and 4, Breezers-hill, f., y.r. 103*l.*	1,000
14, Cannon-st.-rd. (p.h.), f., y.r. 60*l.*	690
116, St. George-st. (p.h.), c., y.r. 65*l.*	875
118, St. George-st. (s.), c., y.r 45*l.*	550
1 to 6, Ratcliffe-st., c., w.r. and y.r. 249*l.* 16s.	2,220

By J. WALTER NEIGHBOUR.

Islington.—37 to 49 (odd), Blundell-st., u.t. 45 yrs., g.r. 38*l.*, w.r. 280*l.*	1,610
Hoxton.—50, Baring-st., u.t. 25½ yrs., g.r. 4*l.* 4s.	160

By NEWBON, SHEPHARD & EDWARDS.

Camden Road.—69 to 79 (odd), King's-rd, u.t, 14½ yrs., g.r. 8*l.* 10s., w r. 246*l.* 12s.	800
Enfield.—Fotheringham-rd., f.g.r. 51*l.* 14s., reversion in 87 yrs.	1,190

By STIMSON & SONS.

Old Kent Road.—Manor-gr., etc., f.g.r. 20*l.*, reversion in 48 yrs.	415
Penge.—St. John's-rd., f.g.r. 32*l.* 10s., reversion in 78 yrs.	755
Tooting.—Letchworth-st., f.g.r. 7*l.*, reversion in 89 yrs.	155
Holloway.—Fulbrook-rd., etc., l g.r. 67*l.* 9s., u.t. 49 yrs., g.r. 11s.	1,145
Hackney.—Poole-rd., etc., l.g.r. 169*l.* 10s., u.t. 38 yrs., g r. 19*l.*	2,580
Brixton.—459, Brixton-rd. and stabling, f., y.r. 65*l.* 2s.	1,880
Clapham.—158, Clapham-rd., u.t. 40 yrs., g.r 12*l.* 10., e.r. 80*l.*	600
Wimbledon.—4, Pelham-rd., f., y.r. 32*l.*	375
Wandsworth.—106 and 108, High-st. (s.), l.r. 40*l.*, u.t. 55 yrs, g.r. 80*l.*	490

By JOHN G. VILLAR (at Cheltenham).
Lower Guiting, Gloucester.—The Guiting Villa Estate, 93 a. 0 r. 17 p., f. £1,510

By W. DAY & SONS (at Maidstone).
Hollingbourne, Kent.—The Limes, and 2¼ acres, f. 755

July 5.—By MESSRS. FURBER.
Hyde Park.—Inverness-ter., f.g.r. 30*l*., reversion in 48 yrs. 950
South Kensington.—Earl's Court-rd., f.g.r. 38*l*., reversion in 44 yrs. 1,210
Stepney.—56, 58 and 60, Ben Jonson-rd., f., y.r. 312*l*. 11s.. Ben Jonson-rd., etc., f.g.r. 50*l*., reversion in 15 yrs. 2,750
Camberwell.—Southampton-st., etc., f.g.r. 271*l*. 10s., reversion in 40 yrs. 8,450
New Cross.—Queen's-rd., etc., f.g.r. 76*l*., reversion in 75 yrs. 2,975
Ilford, Essex.—Hope Farm, 5 a. 0 r. 30 p., f., y.r. 22*l*. 655

By W. W. JENKINSON & CO.
Acton.—Fletcher-rd., f.g.r. 5*l*. 5s., reversion in 91 yrs. 120
Chiswick.—37, 39, 41, and 43, Sutton-la., u.t. 72 yrs., g.r. 20*l*., w.r. 148*l*. 940
29, 30, 31, Back Common-rd., u.t. 72 yrs., g.r. 12*l*., w.r. 93*l*. 12s. 450
Fulham.—43 and 45, Aspenlea-rd., u.t. 72 yrs., g.r. 11*l*., w r. 70*l*. 4s. 380

By HIND & SONS.
Stepney.—67, Maroon-st., f., w.r. 33*l*. 16s. 310
Hoxton.—67 and 69, Wenlock-st., u.t. 25 yrs., g.r. 20*l*., y.r. 33*l*. 105
St. Georges'-in-the-East.—19, Little Turner-st., The Kinder Arms, u.t. 64 yrs., g.r. 55*l*., e.r. 120*l*. 105
Bethnal Green —235, Cambridge-rd., f., w.r. 39*l*. 245
4, Parliament-st., f., w.r. 32*l*. 10s. 195
26, Abingdon-st., f., w.r. 22*l*. 2s. 140
Limehouse.—6, Rich-st., f., w.r. 33*l*. 16s. 185

By STIMSON & SONS.
Hampstead.—Constantine-rd., f.g. rents 92*l*., reversion in 78 yrs. 2,410
Agincourt-rd., f.g.r. 62*l*., reversion in 78 yrs. 1,630
Cressy-rd., f.g. rents 12*l*. 12s., reversion in 78 yrs. 330
Oxford.—6, Queen-st. (s.), u.t. 47 yrs., g.r. 25*l*., y.r. 180*l*. 1,860
Battersea.—118 to 138 (even), Speke-rd., u.t. 57½ yrs., g r. 66*l*., w.r. 357*l*. 10s. 1,470
Kentish Town.—24, Warden-rd., u.t. 43½ yrs., g.r. 5*l*. 10s., e.r. 40*l*. 285
Peckham.—1, 2, and 3. Scipio-st., u t 56½ yrs., g.r. 10*l*., w.r. 101*l*. 8s. 700

Contractions used in this list.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold, p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

PUBLISHER'S NOTICES.

Nat. Tel., 6112 Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME XCII. (January to June, 1907) is given as a supplement with the present issue.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings price 9d. each,

THE NINETY-SECOND VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, will be ready on the 20th inst.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
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Terms for series of Trade advertisements, and for front page and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office*, 4, Catherine Street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed) 1s.

MEETINGS.

FRIDAY, JULY 12.

Edinburgh Architectural Association.—The second of the series of four short lectures will be delivered at the Exhibition in the Rooms of the Royal Scottish Academy by Professor Charles Gourlay, B.Sc., A.R.I.B.A. (Glasgow), on "Thessalonica." The lecture will be illustrated by lantern views. 8.15 p.m.

WEDNESDAY, JULY 17.

Builders' Foremen and Clerks of Works' Institution.—Half-yearly meeting of the members. 8 p.m.

SATURDAY, JULY 20.

Junior Institution of Engineers.—Visit to R.M.S. *Oruba*, and the Tilbury Dock "Pumping Plant," etc.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 7 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 6 0	„ „ „
Picked Stocks for Facings	2 10 0	„ delivered.
Flettons	1 6 0	„ at railway depôt.
Red Wire Cuts	1 14 0	„ „ „
Best Fareham Red	3 12 0	„ „ „
Best Red Pressed Ruabon Facing	5 0 0	„ „ „
Best Blue Pressed Staffordshire	3 15 0	„ „ „
Do. Bullnose	4 0 0	„ „ „
Best Stourbridge Fire Bricks	3 14 0	„ „ „

GLAZED BRICKS.

Best White and Ivory Glazed Stretchers	12 0 0	„ „ „
Headers	11 0 0	„ „ „
Quoins, Bullnose, and Flats	16 0 0	„ „ „
Double Stretchers	19 0 0	„ „ „
Double Headers	16 0 0	„ „ „
One Side and two Ends	19 0 0	„ „ „
Two Sides and one End	20 0 0	„ „ „
Splays, Chamferred, Squints	20 0 0	„ „ „
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	„ „ „
Quoins, Bullnose, and Flats	14 0 0	„ „ „
Double Stretchers	15 0 0	„ „ „
Double Headers	14 0 0	„ „ „
One Side and two Ends	15 0 0	„ „ „
Two Sides and one End	15 0 0	„ „ „
Splays, Chamferred, Squints	14 0 0	„ „ „
Second Quality White and Dipped Salt Glazed	2 0 0	„ less than best.

	s. d.	
Thames and Pit Sand	7 0	per yard, delivered.
Thames Ballast	5 6	„ „
Best Portland Cement	28 0	per ton, „
Best Ground Blue Lias Lime	19 0	„ „

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	„ „
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	„ „
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	„ „

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt
Beer „	1 6	„ „
Greenshill „	1 10	„ „
Darley Dale in blocks	2 4	„ „
Red Corsehill „	2 2	„ „
Closeburn Red Freestone	2 0	„ „
Red Mansfield „	2 4	„ „

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2 10	„ „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super., „
6 in. rubbed two sides ditto, ditto	2 6	„ „
3 in. sawn two sides slabs (random sizes)	0 11½	„ „
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	„ „
1½ in. to 2 in. ditto, ditto	0 6	„ „

HARD YORK—

Scappled random blocks	3 0	per ft. cube, „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. „

STONE (*continued*).

HARD YORK (*continued*)—

6 in. rubbed two sides ditto	3 0	per ft. super. deld. rly. depôt,
3 in. sawn two sides slabs (random sizes)	1 2	„ „
2 in. self-faced random flags	0 5	„ „

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12 „ „	13 17 6	„ „
20×10 first quality „	13 0 0	„ „
20×12 „ „	13 15 0	„ „
16×8 „	7 5 0	„ „
20×10 best blue Portmadoc	12 12 6	„ „
16×8 „ „	6 12 6	„ „
20×10 best Eureka unfading green	15 17 6	„ „
20×12 „ „	13 7 6	„ „
18×10 „ „	13 5 0	„ „
16×8 „ „	10 5 0	„ „
20×10 permanent green	11 12 6	„ „
18×10 „ „	9 12 6	„ „
16×8 „ „	6 12 6	„ „

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt
Hip and Valley tiles	3 7	per doz. „
Best Broseley tiles	50 0	per 1000 „
Do. Ornamental tiles	52 6	„ „
Hip and Valley tiles	4 0	per doz. „
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	„ „
Do. Ornamental do.	60 0	„ „
Hip tiles	4 0	per doz. „
Valley tiles	3 0	„ „
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 „
Do. Ornamental do.	54 6	„ „
Hip tiles	4 1	per doz. „
Valley tiles	3 8	„ „
Best "Rosemary" brand plain tiles	48 0	per 1000 „
Best Ornamental tiles	50 0	„ „
Hip tiles	4 0	per doz. „
Valley tiles	3 8	„ „
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 „
Do. pressed	47 6	„ „
Do. Ornamental do.	50 0	„ „
Hip tiles	4 0	per doz. „
Valley tiles	3 6	„ „

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less thn best.
Battens: seconds	0 10 0	„ „
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	„ At per load of 50 ft.
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 1 in.	18 10 0	... 20 0 0
„ „ 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3in. by 11in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
„ „ 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
„ „ 3 in. by 9 in.	12 10 0	... 13 10 0
„ „ battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0
Yellow Pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	„
Seconds, regular sizes	33 0 0	„
Yellow Pine oddments	28 0 0	„
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	... 0 3 6
Small „ „	0 2 6	... 0 2 9
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0

WOOD (*continued*).

JOINERS' WOOD (*continued*)—	At per standard. £ s. d.	£ s. d.
Teak, per load	17 0 0	22 0 0
American Whitewood Planks, per ft. cube	0 4 0	0 5 0
Prepared Flooring, etc.—	**Per square.**	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
⅝ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. " "	0 14 0	0 18 0
⅝ in. by 7 in. white " "	0 10 0	0 11 6
1 in. by 7 in. " " "	0 12 9	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 7 6	7 15 0
Compound Girders, ordinary sections	9 10 0	10 10 0
Steel Compound Stanchions	12 5 0	13 5 0
Angles, Tees, and Channels, ordinary sections	9 5 0	10 5 0
Flitch Plates	9 5 0	10 5 0
Cast Iron Columns and Stanchions including ordinary patterns	8 0 0	9 0 0

METALS.

IRON—	Per ton, in London. £ s. d.	£ s. d.
Common Bars	8 10 0	9 0 0
Staffordshire Crown Bars, good merchant quality	9 5 0	9 15 0
Staffordshire "Marked Bars"	11 0 0	—
Mild Steel Bars	9 10 0	9 15 0
Hoop Iron, basis price	9 15 0	10 0 0
" " Galvanised	17 10 0	—
("And upwards, according to size and gauge.)		
Sheet Iron Black—		
Ordinary sizes to 20 g.	10 0 0	—
" " 24 g.	11 0 0	—
" " 26 g.	12 10 0	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	16 0 0	—
Ordinary sizes to 22 g. and 24 g.	16 10 0	—
" " 26 g.	17 0 0	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	19 0 0	—
" " 22 g. and 24 g.	19 10 0	—
" " 26 g.	21 0 0	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	16 0 0	—
" " 22 g. and 24 g.	16 5 0	—
" " 26 g.	17 10 0	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	13 0 0	—
Best Soft Steel Sheets, 22 g. & 24 g.	14 0 0	—
" " " 26 g.	16 0 0	—
Cut Nails, 3 in. to 6 in.	10 15 0	11 5 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up.	25 0 0	—
Pipe in coils	25 10 0	—
Soil pipe	27 10 0	—
Compo pipe	28 10 0	—
ZINC—Sheet—		
Vieille Montagne ton	33 0 0	—
Silesian	32 15 0	—
COPPER—		
Strong Sheet per lb.	0 1 4	—
Thin " "	0 1 5	—
Copper nails "	0 1 3	—
BRASS—		
Strong Sheet "	0 1 2	—
Thin " "	0 1 3	—
TIN—English Ingots "	0 1 11	—
SOLDER—Plumbers' "	0 0 9	—
Tinmen's "	0 0 11	—
Blowpipe "	0 1 1	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1⅞d. " "
21 oz. thirds	3½d. " "
" fourths	2⅝d. " "
26 oz. thirds	4½d. " "
" fourths	3⅜d. " "
32 oz. thirds	5d. " "
" fourths	4½d. " "
Fluted Sheet, 15 oz.	3⅜d. " "
" 21 oz.	4½d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

¼ Hartley's	2½d. per ft. delivered.
⅜ "	2½d. " "
½ "	3d. " "
Figured and Oxford Rolled "Oceanic" Glass, white	4d. " "
Do. " tinted	5½d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 4
" " " in barrels	"	0 2 5
" " " in drums	"	0 2 7
Boiled " " in pipes	"	0 2 6
" " " in barrels	"	0 2 7
" " " in drums	"	0 2 8
Turpentine in barrels	"	0 3 7
" in drums	"	0 3 9
Genuine Ground English White Lead	per ton	27 0 0
Red Lead, Dry	"	24 10 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, and Canada 21s. 8d. (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 28s. per annum.

Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office 19s. per annum (52 numbers) or 4s. 9d. per quarter (13 numbers), can ensure receiving "The Builder" by *Friday Morning's Post*.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERTILLERY.—For alterations and additions to the Powell Tillery Workmen's Institute, for the Committee and Trustees. Mr. F. R. Bates, architect, Westgate-chambers, Newport:—

H. Smith, Wolverley and Kidderminster* .. £1,631

BODHAM.—For alterations, additions, and repairs to Bodham schools, Norfolk, for the Norfolk Education Committee. Mr. Edwin J. Tench, A.R.I.B.A., architect, Royal Insurance-buildings, Norwich. Quantities by Mr. Harker Bousfield, Norwich:—

Baker, Ltd.	£300 0	Tuthill	£256
Downing & Sons	299 0	Blyth	250
Gunton	283 17	Neale, Baconsthorpe*	250
Podd & Fisher	270 0		

BROMLEY.—For alterations and additions to the reception block and nurses' home at the Bromley Asylum, for the Managers of Poplar and Stepney Sick Asylum District. Messrs. J. & W. Clarkson, architects, 136, High-street, Poplar, E.:—

C. Yates & Co.	£5,123	W. Lawrence & Son	£4,584
Thomas & Edge	5,017	J. Greenwood, Ltd.	4,574
B. E. Nightingale	4,983	J. Chessum & Sons	4,522
D. Lowe & Co.	4,910	F. & H. F. Higgs	4,499
R. A. Lowe	4,869	W. Reason	4,489
C. Dearing & Sons	4,793	W. J. Maddison	4,446
Perry & Co.	4,665	Griggs & Son, Cubitt Town, E.*	4,289
A. E. Symes	4,600		
F. & T. Thorne	4,597		

CARDIFF.—For the supply of cast-iron socket-pipes for waterworks, for the Corporation. Mr. C. H. Priestley, Waterworks Engineer, City Hall, Cardiff:—

Jordans Ltd., Newport* £829

CARSHALTON.—For one and a quarter miles of stoneware-pipe sewers, etc., for the Urban District Council. Mr. W. Willis Gale, Engineer, Carshalton:—

R. H. B. Neal, Ltd.	£3,087 12 2	I. Dean & Co.	£1,937 0 5
Pedrette & Co.	2,495 8 4	Willis & Powis	1,846 16 0
T. Adams	2,271 8 1	T. Free & Son	1,752 10 10
J. Pearson Wilson, & Co.	2,092 17 4	G. Bell & Son	1,705 7 7
R. W. Swaker	2,078 15 7	W. Hall	1,693 6 2
A. N. Coles	2,056 8 0	E. & E. Iles	1,619 0 0
T. H. Macdonald	2,011 0 0	J. B. Potter	1,555 7 6
F. W. Trimm	1,990 0 0	Ripley, Strong, & Co.	1,503 18 4
F. White	1,943 1 6	James & Co.	1,497 0 0
Langley & Johnson	1,935 13 6	W. Pearce	1,490 0 0
		J. May, Ashstead‡	1,275 0 0

‡ Recommended for acceptance.

CHARD.—For the erection of four cottages, for Mr. Wm. Fowler, Silver-street, Chard. Messrs. Symes & Madge, architects, Chard. Quantities by architects:—

F. Sidwick	£970	R. Harris	£880 0
Harris & Woolcott	920	A. Fowler	866 5
Strawbridge & Collins	908	Bishop & Son, Chard*	799 0
Parsons Bros. & Dunster	883		

CRICKLEWOOD.—For the execution of certain road-making and paving works in new road between Mora-road and Wotton-road, Cricklewood, for Willesden District Council. Mr. O. Claude Robson, M.Inst.C.E., Public Offices, Dyne-road, Kilburn, N.W.:—

T. Adams £373
F. G. Brummell, 44, Sandringham-road, Willesden Green* 335

CROOK.—For rebuilding portion of factory, for Mr. J. Anderson. Mr. H. T. Graydon, architect, Market-place, Durham:—

W. Walton, Crook* £1,035 8 10
[Lowest of seven tenders received.]

DARTFORD (Kent).—For erecting cottages and other buildings in connexion with Joyce Green Hospital, for the Metropolitan Asylums Board. Messrs. Treadwell & Martin, architects, Charing Cross House, 28A, Charing Cross-road, W.C.:—

Myles & Warner	£5,988 8 5
B. & A. Gale	5,879 0 0
G. H. Gunning & Sons	5,799 0 0
C. Wall, Ltd.	5,626 0 0
Myall & Upson	5,539 0 0
C. Dearing & Son	5,498 0 0
W. Johnson & Co., Ltd.	5,295 0 0
W. F. Blay	5,241 0 0
Patman & Fotheringham, Ltd.	5,163 0 0
F. G. Minter	5,123 0 0
Martin Wells & Co., Ltd.,	5,054 0 0
J. Lonsdale	4,996 0 0
G. E. Wallis & Sons, Ltd.	4,939 0 0
E. Streather	4,731 10 0
A. N. Coles, New Town-chambers, Plymouth and Chelsea‡	4,713 0 0

‡ Subject to sanction of the Local Government Board.

DORCHESTER.—For painting and decorating municipal buildings, including Town Hall and Corn Exchange, for the Town Council. Mr. G. J. Hunt, Borough Engineer and Surveyor, Guildhall-chambers, Dorchester:—

J. Winzar	£195 10
Rendell & Son	193 5
Barrett & Son*	173 5

[All of Dorchester. Surveyor's estimate, £175.]

External Work.

J. Winzar	£28 10
Barrett & Son	31 5
Rendell & Son, Dorchester*	25 0

[Surveyor's estimate, £30.]

DORCHESTER.—For repairs to Council schools, for Dorset County Council Education Committee. Mr. W. J. Fletcher, Wimborne:—

Almer School.
E. J. Gollop, Lytchett Matravers* .. £22 0 0
Gillingham School.
S. Curtis, Stalbridge* 14 10 0
Lytchett Minster School.
W. A. Baker, Lytchett Minster* 1 19 0
Morden School.
E. J. Gollop, Lytchett Matravers* .. 15 0 0
Stower Provost School.
Barnes Bros., Stower Row* 27 13 6
Wareham School.
A. Marsh, Wareham* 6 10 0
West Chickerell School.
C. B. Hillyer* 2 12 6

FULBOURN.—For painting and redecorating Fulbourn Asylum, Cambs. Alternate price given for paint or distemper. Messrs. MacAlister & Skipper, architects, 20, St. Andrew's-street, Cambridge. Quantities by architects:—

	For paint.	For distemper.
Redding & Son	£626 0 0	£553 15 0
Newton	521 12 9	439 15 5
Banyard	487 6 1	410 15 2
Willmott & Son	470 13 8	432 8 8
Coulson & Lofts	470 4 1	414 12 10
Rooke	407 12 2½	335 17 4
Clark & Son	405 15 6	356 12 10
Scales & Robins	394 5 4	347 5 6
Ambrose, Cambridge*	382 12 0	322 4 1

GENDROS.—For the alterations and additions to Gendros Council School, near Swansea. Mr. W. J. Nash, A.R.I.B.A., The Square, Neath:—

D. Davies & Sons	£2,623 0 0	D. W. Davies	£2,076 9 0
Walters & Johns	2,255 6 5	Bennett Bros.	2,052 0 0
W. H. Evans	2,246 11 6	J. & F. Weaver, Swansea*	2,050 0 0
T. Richards	2,189 0 0	Pye, Parkinson, & Co.	1,807 0 0
Lloyd Bros.	2,142 0 0		

GLAMORGAN.—For the alterations and additions to Waunarlwydd Council School, Gowerton, near Swansea, for the Glamorgan County Council. Mr. W. James Nash, A.R.I.B.A., County Architect (Western Division), The Square, Neath:—

A. & A. Thomas, Pontardulais* £555

HARROGATE.—For painting the exterior of the Bilton, Oatlands, and Starbeck Council Schools, for the Corporation. Mr. F. Bagshaw, Borough Engineer and Surveyor, Harrogate:—

Bilton and Starbeck.
Marshall & Garland, 2, Tower-street, Harrogate* £45
Oatlands.
W. Norman, Rudding Mount, Hookstone-road, Harrogate* £20

HARROGATE.—For private street works, West Lea-avenue (Harlow Hill) and Back-road, for the Corporation. Mr. F. Bagshaw, Borough Engineer and Surveyor, Harrogate:—

C. H. Dickinson, Forest-lane, Starbeck* £313 2
A. Woodiwiss, 105, Skipton-road, Harrogate* 14 0

HEREFORD.—For Mr. George Davies, Hereford, for the erection of a new house on the Belmont Estate, Hereford. Mr. Herbert Skyrme, architect, Widemarsh-street, Hereford:—

Wm. Powell, Hereford £477 0 0

HULL.—For erecting a junior school in Stepney-lane, for the Education Committee. Mr. J. H. Hirst, City Architect, Town Hall, Hull:—

H. T. Arnott	£5,461 14 5	E. Quibell	£4,699 0 0
G. Houlton & Son	4,890 0 0	C. Greenwood	4,638 11 6
J. H. Fenwick	4,847 0 0	Hull General Builders, Ltd.*	4,597 0 0
T. Goates	4,787 0 0	M. Harper†	4,564 10 0

[All of Hull.]

* Accepted Tender. † Conditional Tender.

ILFORD.—For erecting a public library and hall, etc., at the junction of Kingswood-road and High-road, Seven Kings, for the Urban District Council. Mr. H. Shaw, Engineer and Surveyor, Town Hall, Ilford:—

W. E. Westgate, Mauneys-road, Romford* £5,843 16 3

HARPENDEN.—For private street works, Avenue St. Nicholas, Wordsworth-road, etc., for the Urban District Council. Mr. J. H. Leverton, surveyor, Public Hall, Harpenden:—

—	Avenue St. Nicholas.	Amenbury-lane.	Townsend-lane.	Wordsworth-road.	Townsend-road.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
W. Griffiths & Co.	618 0 10	311 11 6	310 5 3	644 18 4	190 7 8	2,075 3 7
T. Free & Sons	559 17 6	279 19 6	284 5 0	561 4 8	159 16 0	1,845 2 8
T. Adams	572 18 11	286 3 3	282 5 8	543 7 2	142 1 1	1,826 16 1
A. Palmer	577 6 3	279 13 2	265 9 0	538 0 0	162 5 0	1,822 13 5
J. C. Trueman	543 0 0	269 0 0	277 0 0	531 0 0	144 0 0	1,769 0 0
C. Killingback & Co.	518 8 11	258 6 8	244 6 4	563 5 7	158 0 4	1,742 7 10
G. Powdrill	508 13 9	251 3 4	239 17 8	534 4 8	152 13 7	1,686 13 0
H. Williams, St Alban's*	474 17 9	252 0 8	213 18 1	464 11 8	141 3 4	1,576 11 6*
Surveyor's estimate	529 3 3	263 14 0	255 0 0	485 15 9	133 6 8	1,666 19 9

KELLING.—For alterations, additions, and repairs to Kelling Schools, Norfolk, for the Norfolk Education Committee. Mr. Edwin J. Trench, A.R.I.B.A., architect, Royal Insurance Buildings, Norwich. Quantities by Mr. Harker, Bousfield, Norwich:—

Downing & Son	£562 0	Neale	£448 10
C. T. Baker Ltd.	535 16	Podd & Fisher	448 0
Gunton	520 0	Blyth, Sheringham*	425 0
Tuthill	460 0		

KING'S HEATH.—For alterations to car-sheds at King's Heath, for King's Norton and Northfield Urban District Council. Mr. Ambrose W. Cross, Engineer and Surveyor, 23, Valentine-road, King's Heath. Quantities by Engineer:—

G. P. Trentham	£1,764 0 0	Robinson & Son	£1,166 0 0
T. A. Cole & Son	1,420 0 0	Baker & Warr	1,156 0 0
Hilbert & Ladbury	1,335 14 3	G. E. Cragg	1,159 0 0
H. J. Pitts	1,290 0 0	W. J. Morris	1,098 3 8
Garfield	1,179 0 0	E. Crowder, Birmingham*	995 0 0
W. H. Gibbs	1,175 0 0		

LLANSAMLET.—For building cloakrooms, etc., at Peniel Green Council School, Llansamlet, near Swansea. Mr. W. J. Nock, A.R.I.B.A., The Square, Neath:—

Price Bros.	£710 0 0	J. Goodridge & Son	£611 0 0
E. D. W. Evans	672 10 0	P. Gaylard	597 0 0
W. H. Evans	672 1 1	Walters & Johns	582 4 9
Bennett Bros.	635 14 0	D. W. Rosser, Llansamlet*	496 0 0
D. W. Davies	615 16 0		

LONG BENTON.—For the completion of street works, Back East-avenue, for Rural District Council. Mr. A. S. Dinning, surveyor, 21, Ellison-place, Newcastle:—

W. Carr, Gosforth* £94 5 8

LONDON.—For new detached residence, Hendon-avenue, Grass Park Estate, Finchley, for Mr. J. Dales. Mr. Walter Bennett, architect, Broadway, Finchley:—

Edwards & Medway	£1,727	W. Tout	£1,623
F. Gough & Co.	1,743	W. Lawrence & Son	1,622
Mattock & Parsons	1,691	Mattock Bros.	1,617
Patman & Fotheringham	1,683	W. Sharpin	1,586
Silk & Son	1,677	W. Gibson & Co.*	1,574
		Sheffield Bros.	1,547

LONDON.—For new billiard-room adjoining "Moulmein," The Grove, Finchley, for Mr. R. J. Bailey. Mr. Walter Bennett, architect, Finchley, N.:—

Ne-Vard & Shadbolt £147

LONDON.—For detached residence, Northumberland-road, Willenhall Park Estate, New Barnet. Mr. Walter Bennett, architect, Finchley, N.:—

W. Gibson & Co.* £1,104

LONDON.—For a pair of semi-detached houses, Lyonsdown-road, Willenhall Park Estate, New Barnet. Mr. Walter Bennett, architect, Broadway, Finchley, N:—

W. Gibson & Co.* £1,500

LONDON.—For detached residence, Holly Park, Finchley, for Dr. J. Archibald, M.D. Mr. Walter Bennett, architect, Broadway, Finchley, N.:—

T. Bastard	£1,450	Ne-Vard & Shadbolt*	£1,286
McEwan & Son	1,450		

LONDON.—For detached house, Lyonsdown-road, Willenhall Park Estate, New Barnet, for Mrs. L. A. Turton. Mr. Walter Bennett, architect, Broadway, Finchley, N.:—

Gibson & Co.	£750	Ne-Vard & Shadbolt	£735
McEwan & Son	750		

LONDON.—For the "Southfield" new school, Wandsworth, for the London County Council:—

B. E. Nightingale	£20,440 0 0
J. Guttridge	19,804 0 0
W. E. Davey	19,372 2 4
Martin, Wells, & Co., Ltd.	19,060 0 0
H. Y. Flint	19,005 8 2
T. H. Kingerlee & Sons	18,992 0 0
W. Johnson & Co., Ltd.	18,971 0 0
Galbraith Bros.	18,887 12 8
J. & M. Patrick	18,862 0 0
Lole & Co.	18,595 3 10
G. E. Wallis & Sons, Ltd.	18,566 0 0
C. Wall, Ltd.	18,500 0 0
W. Moss & Sons, Ltd.	18,392 15 7
J. & C. Bowyer	18,185 0 0
W. E. Blake	17,831 15 5
Holiday & Greenwood, Ltd.	17,777 0 0
E. J. Clayton, Aldine Works, Shepherd's Bush†	17,129 0 0
F. & E. Davey, Ltd.	17,124 1 8

[The estimate of Architect (Education), comparable with the tenders, is £18,063.]

LONDON.—For erection of cottages on section C., Totterdown Fields Estate, Tooting, for the London County Council:—

Leslie & Co., Ltd.	£8,388 0	F. & T. Thorne	£7,383 0
H. L. Holloway	7,674 0	F. & H. F. Higgs	7,367 0
C. Wall, Ltd.	7,649 0	G. A. Gale	6,345 10
J. Smith & Sons, Ltd.	7,557 0	J. Parsons	6,163 0
W. & C. Brown	7,410 0	F. W. Fletcher, Maybury-street, Tooting†	5,800 0
Holliday & Greenwood	7,395 0		

[The Architect's estimate, comparable with the tenders, is £6,000.]

LONDON.—For culverting of the river Moselle, White Hart-lane estate, for the London County Council:—

E. J. Knifton	£8,072 18 0	Pedrette & Co.	£6,983 3 5
T. Adams	7,653 10 0	T. W. Pedrette, Stoke Newington†	6,977 16 9
Grounds & Newton	7,364 10 11		
E. Frost	7,264 16 6		

LONDON.—For providing and fixing two boilers and low-pressure hot-water apparatus at Lawn-lane school, Kennington, for the London County Council:—

C. P. Kinnell & Co., Ltd.	£1,075 0
J. Jeffreys & Co.	979 0
Korting Bros., Ltd.	872 0
G. Davis	860 0
Davis, Bennett, & Co.	820 0
R. Dawson & Co., Ltd.	796 0
W. G. Cannon & Sons	772 15
G. N. Haden & Sons	765 17
J. & F. May	760 0
Wenham & Waters, Ltd.	757 0
J. Gray	756 0
Stevens & Sons	690 0
Lea & Warren, 7, Victoria-street*	660 0

[The estimate of the Architect (Education), comparable with the tenders, is £700.]

LONDON.—For heating British-street School, Poplar, for the London County Council:—

G. & E. Bradley	£753 0 0
Russell & Co.	709 0 0
Brightside Foundry and Engineering Co., Ltd.	691 0 0
T. S. Knight & Sons	669 0 0
J. C. Christie	657 0 0
J. Defries & Sons, Ltd.	654 0 0
W. G. Cannon & Sons, Ltd.	652 16 0
J. Yetton & Co.	621 0 0
Palowkar & Sons	598 0 0
Lancashire Heating Co., Ltd, Sackville Works, Temple-street, Manchester*	589 0 0

[The estimate of the Architect (Education), comparable with the tenders, is £650.]

LONDON.—For heating Mitcham-lane school, Wandsworth, for the London County Council:—

Stubbs, Son, & Hall	£850 13
Turner & Co.	849 0
C. Ching & Co., Ltd.	839 0
Beeson & Sons	825 0
Lea & Warren	800 0
Strode & Co.	758 0
Brightside Foundry and Engineering Co., Ltd.	739 0
B. Harlow & Son	727 0
A. Macintosh & Sons, Ltd., 14, Market-place, Cambridge*	593 10

[The estimate of the Architect (Education), comparable with the tenders, is £725.]

LONDON.—For the erection of new married quarters at Regency-street, for the Metropolitan Police Force. Mr. J. Dixon Butler, F.R.I.B.A., Surveyor to the Metropolitan Police, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, Charing-cross Chambers, Duke-street, Adelphi:—

C. Ansell	£13,600	W. Eyre	£12,800
Lathey Bros.	13,549	Holloway Bros.	12,780
Lascelles & Co.	13,450	Treasure & Son	12,607
Lovatt, Ltd.	13,363	Prestige & Co.	12,539
Appleby & Sons	13,140	Lawrence & Sons	12,475
Harris & Wardrop	13,105	Mowlem & Co.	12,474
Godson & Sons	13,087	F. Higgs	12,195
J. Carmichael	12,997	Fairhead & Son	12,075
Higgs & Hill	12,984	Grover & Sons	11,843
F. C. Minter	12,850		

LONDON.—For erecting a weighbridge, Elder-road School, West Norwood, for Lambeth Guardians. Messrs. Woodward & Brooks, 69, Kennington-oval, S.E.:—

Pasterfield & English, 58, Sunnyhill-road, Streatham, S.W. £98

LONDON.—For erecting a bath-room at Workhouse, St. Leonard's-street, Bromley-by-Bow, for Stepney Guardians. Mr. R. W. Heasman, architect, 197, Burdett-road, E.:—

A. Hood	£516 7	A. E. Hubbard	£315 0
Abbot & Charlton	359 10	Wood Bros., 93, Whyteville-road, Forest Gate*	239 10
McLaughlin & Harvey	399 0		
Loasby & Salmon	323 0		

LUDLOW.—For additions to water supply system, for the Corporation. Messrs. H. P. Maybury, and J. A. Spreckley, Surveyors:—

W. Turner	£2,001 10 5	T. Speake, Church Stretton*	£1,445 14 7
W. Hotchkiss	1,988 2 9	H. Holloway	1,442 0 2
Kirk & Randall	1,898 5 9	G. H. York & Co.	1,411 17 0
B. Firth	1,883 8 6	W. Westward	1,395 3 0
T. Vale & Sons	1,660 0 0		
R. Davis	1,656 7 3		
G. Law	1,569 0 0		

MILFORD HAVEN.—For erecting a dwelling-house in Great North-road, for Mr. E. E. Carter. Mr. A. S. Chugg, architect and surveyor, 14, Waterloo-road, Milford Haven:—

W. & G. Cole	£699 0 0	Phelps & Owens*	£600 0 0
Lloyd & Co.	666 0 0		

[All of Milford Haven.]

MANCHESTER.—For the erection of the chancel, chapel, vestries, organ chambers, etc., and four bays of the nave of the new Church of St. Agnes, North Reddish, for the building committee. Messrs. C. K. & L. C. Mayor, architects, Dalton-chambers, 41, John Dalton-street, Manchester:—

J. Ramsbottom	£5,856	Willson & Toft	£5,200
S. Megarity & Co.	5,820	I. Gerrard & Sons, Ltd.	5,122
Hill & Heyes	5,748	W. Thorpe	5,097
Burgess & Galt	5,617	G. Macfarlane & Son, C.-on-M.*	5,000
R. Carlyle	5,287		
Young, Tinker, & Young	5,228		

NORWICH.—For colouring, painting, etc., of various schools, for the Education Committee. Mr. C. J. Brown, architect and surveyor, Cathedral-offices, The Close, Norwich:—

Avenue-road School.
Lawn & Blyth, Farmer's-avenue, Norwich £89 7 6
Bull Close-road School.
A. Taylor, Onley-street, Norwich 24 0 0
George White School.
T. Horth, Magdalen-street, Norwich 67 5 0
Heigham-street School.
I. W. King, Grove-road, Norwich 119 0 0
Quay-side School.
H. Whiting, St. Saviour's, Norwich 62 10 0
St. Paul's School.
A. Taylor, Onley-street, Norwich 10 0 0
Thorpe Hamlet School.
S. H. Wiley, Mancroft-street, Norwich .. 30 0 0
Offices of Schools.
A. Browne, Park-lane, Norwich 34 15 0

OVERWATER.—For reservoir works, for Aspatria, Silloth, and District Joint Water Board. Mr. C. B. Newton, M.Inst.C.E., Whitehall-chambers, Carlisle:—

Laing & Son	£2,885 0 0	J. Dawson, Whitehaven*	£2,436 19 1
J. Routledge	2,745 12 5		
J. Beaty	2,659 0 0		

PENYBONTFAWR.—For additions and alterations to Cadnant Farm House, for Mr. W. Littleton. Messrs. Hall, Pain, & Goldsmith, surveyors, 48, West-street, Fareham, Hants. Quantities not supplied:—

D. Mason	£390	J. Jones	£312
W. H. Thomas	350	E. Owen, Llanrhaiadr*	273

PLYMOUTH.—For electric-lighting installation and emergency gasfitting work at new Infirmary, for the Guardians. Drawings, etc., by Messrs. Thornely & Rooke, architects, etc., Plymouth:—

Electric-Lighting Installation.
Dargue, Griffiths, & Co., Ltd., May Buildings, 51, North John-street, Liverpool* . £334
Emergency Gaswork.
T. E. Deans, R.P., 6, Alma-place, Plymouth* 108

[Contractors for the general building operations, Messrs. Lapthorne & Co., Plymouth.]

PLYMOUTH. — For painting, carpentering, and masonry work at the various scattered homes:—

W. Hogan, 17, Sydney-street, Plymouth* .. £10 12

ROCHESTER. — For erecting a seamen's institute, High-street. Messrs. Drake & Boucher, architects, Rochester:—

Browning	£2,965	Baker	£2,703
Wilford	2,898	Phillips	2,590
Wallis	2,818	Gates	2,550
Filley	2,769	West	2,469
Harris	2,729	Skinner, Chatham	2,446

[Architect's estimate, £2,581.]

SALTERHEBBLE.—For painting nurses' home and two circular pavilions and two oblong pavilions at the Poor Law Hospital for Halifax Guardians:—

D. G. Smith, Friendly, Halifax £59

SHEFFIELD.—For lavatory and w.c. accommodation at the Town Hall, for the Improvement Committee of the Sheffield City Council. Mr. Charles F. Wike, City Surveyor, City Surveyor's Office, Sheffield:—

Lavatory and W.C. Accommodation for City Treasurer's Department.
J. Eshelby & Son, Spring-street, Sheffield* £524 18 0
Underground W.C.'s and Urinal, Town Hall Yard.
J. Eshelby & Son, Spring-street, Sheffield* £159 17 0

SHEFFIELD.—For painting and decorating work at the Swallownest Hospital, near Sheffield, for South Rotherham, Handsworth, and Koveton Park District Isolation Committee. Mr. J. E. Whitehead, architect, 38, Bank-street, Sheffield:—

F. Machon	£191 10	Simpson & Melling*	£127 9 6
Puttrell & Co.	190 0		
T. Jones	130 0		

[All of Sheffield.]

SHEPTON MALLET.—For certain alterations and additions at Kilver-street factory, Shepton Mallet, for Mr. E. Jardine, Nottingham. Messrs. Wainwrights & Heard, surveyors, Estate Offices, Shepton Mallet:—

T. Lydford	£2,347 0 0	Banfield & Fletcher	£1,618 18 11
O. Allen	1,835 0 0	Smith & Marchant, Shepton Mallet*	1,615 0 0
S. Dodimead & Sons	1,770 0 0		
R. I. Stead	1,705 15 0		

[Architect's estimate, £1,693 13.]

SUTTON-ON-SEA.—For house. Sutton-on-Sea. Messrs. A. R. Calvert & William R. Gleave, architects, 18, Low-pavement, Nottingham:—

F. Moore* £520

[Lowest of three tenders.]

TOTTENHAM.—For repairs to various schools, for the Education Committee. Mr. W. H. Prescott, Surveyor, Council Offices, Tottenham:—

Downhills School and Education Office.
Groves & Son, Tottenham £294 0 0
Earlsmead School.
Rayner & Co., Tottenham 201 0 0
Stamford Hill School.
Woollaston Bros., Hackney 275 10 0
Small Repairs to Various Schools.
Moore & Son, Tottenham 147 13 6

SWANSEA.—For erecting a Parish Hall at the rear of Christ Church. Messrs. Wm. Cousins & Son, architects and surveyors, 168, St. Helens-road, Swansea. Quantities by architects:—

R. Lacey, Swansea*	£1,460

UPMINSTER.—For outfall sewers, for Romford Rural District Council. Mr. E. G. Boden, Surveyor:—

Wilson&Border	£435 4 0	W. E. Westgate	£361 6 9
J. Murrell	434 10 0	J. Jackson	361 4 0
H. F. White	425 9 11	D. T. Jackson	360 3 0
A. Loan	404 0 0	T.C.Thompson*	343 10 9
T. J. Bailey	390 1 6	J. C. Porter	341 5 0
B. W. Glenny	382 13 9		

WANDSWORTH.—For the extension of "D" block, at the Workhouse, Garratt-lane, for the Guardians. Mr. C. A. Sharp, A.R.I.B.A., 11, Old Queen-street, Queen Anne's-gate, S.W.:—

Fitch & Cox	£2,559 0 0	W. Johnson & Co.	£2,249 0 0
A. S. Vigor & Co.	2,543 0 0	C. F. Kearley	2,239 0 0
T. Hollowav	2,470 0 0	Cropley Bros., Ltd.	2,235 0 0
C. Dearing & Sons	2,465 0 0	F. & H. Higgs	2,228 0 0
J. Garrett & Son	2,384 0 0	F. Webster & Son	2,196 0 0
A. Coles	2,332 0 0	Spencer, Santo, & Co.	2,185 0 0
Thomas & Edge	2,326 0 0	F. & G. Foster	2,161 0 0
W. Lawrence & Son	2,324 0 0	Jarman, Daws, & Co.	2,155 0 0
J. Barker & Co.	2,311 0 0	S. E. Moss & Co.	2,128 0 0
Myall & Upson	2,303 9 6	A. Leather	2,122 0 0
Martin, Wells, & Co.	2,299 0 0	E. B. Tucker	2,116 0 0
Pasterfield & English	2,299 0 0	Sands & Burley	2,090 0 0
J. Longley & Co.	2,294 0 0	Cook & Sons	2,090 0 0
J. Chessum & Sons	2,275 0 0	F. Eaton	2,069 0 0
J. & W. Drake	2,269 0 0	E. Wall	2,022 0 0
Patman & Fotheringham	2,263 0 0	W. H. Hyde & Co., Norwood Junction*	1,986 0 0
F. G. Minter	2,250 0 0		

WILLESDEN.—For the supply of 1,299 ft. lineal or thereabouts of 30-in. concrete tubes, together with saddle junctions and other work incidental thereto, to be supplied to the Recreation Ground, Stonebridge, Willesden, N.W., for the District Council. Mr. O. Claude Robson, M.Inst.C.E., Public Offices, Dyne-road, Kilburn, N.W.:—

1,299 ft. lineal 30-in. Internal Diameter Concrete Tubes, in 2 ft., 2 ft. 6 in., or 3 ft. lengths.

	Per foot run. s. d.
Sharp, Jones, & Co.	6 0
J. Ellis & Sons	5 1
Imperial Stone Co., East Greenwich*	5 0

Saddle Junctions for Connecting up 9-in. Stoneware Pipes.

	Each. s. d.
Sharp, Jones, & Co.	5 0
Imperial Stone Co., East Greenwich*	5 0
J. Ellis & Sons	4 3½

Saddle Junctions for Connecting up 6-in. Stoneware Pipes.

	Each. s. d.
Sharp, Jones, & Co.	5 0
Imperial Stone Co., East Greenwich*	3 6
J. Ellis & Sons	2 10

Saddle Junctions for Connecting up 4-in. Stoneware Pipes.

	Each. s. d.
Sharp, Jones, & Co.	5 0
Imperial Stone Co., East Greenwich*	2 6
J. Ellis & Sons	2 4

WILLESDEN.—For the execution of certain paving works in passages at rear of houses in Walm-lane, Station-road, Grosvenor-gardens, Stanley-gardens, and Blenheim-gardens, Willesden Green, N.W., for the District Council. Mr. O. Claude Robson, M.Inst.C.E., Public Offices, Dyne-road, Kilburn, N.W.:—

T. Adams, Wood Green, N.	On schedule of prices.
F. G. Brummell, Willesden Green, N.W.	

WINCHMORE HILL.—For pointing and repairing works at the Northern (Convalescent) Fever Hospital, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

T. Robinson	£1,848 11 3
C. J. Newby & Bros.	1,797 0 0
Stevens & Sons	1,468 0 0
H. F. Webb	1,395 15 0
W. Hussey, Albert Hall Mansions, S.W.*	1,055 0 0

WINDSOR.—For house connexions, Clewer Without, for the Rural District Council. Mr. W. Menzies, Surveyor, Englefield Green, Surrey:—
W. Green & Son, Clewer, Windsor, on schedule of prices.*

WOKING (Surrey).—For new orphanage, for the Committee of the London & South-Western Railway Servants' Orphanage. Mr. W. E. Trevena, architect, Southampton-street, South Farnborough, Hants. Quantities by the architect:—

Ingram & Sons	£24,306 0 0	Perry & Co.	£20,480 0 0
Musselwhite & Sapp	23,450 0 0	Goddard&Sons	20,359 0 0
Treherne	23,046 4 6	Minter	20,107 0 0
Harris & Son	23,000 0 0	Martin, Wells, & Co., Ltd.	19,615 0 0
Holloway Bros.	21,760 0 0	Knight	19,600 0 0
Grace & Sons	21,534 0 0	Hughes, Wokingham*	19,129 0 0
Jenkins & Sons	21,357 0 0	Lapthorne&Co.	18,425 0 0
Watson	21,275 0 0		

WOLVERHAMPTON.—For the erection of nurses' home at the Wolverhampton and Staffs. General Hospital for the Board of Management. Mr. Arthur W. Worrall, architect, North-street, Wolverhampton. Quantities by Mr. Hy. Vale, Wolverhampton:—

		Allowance for old buildings on site.	Net Total.
L. Jones	£6,689	—	£6,689
F. W. Beard	6,697	100	6,597
Hy. Lovatt	6,439	60	6,379
Hicken & Sons	6,235	75	6,160
T. Tildesley	6,300	250	6,050
T. & S. Ham	6,140	150	5,990
H. Willcock & Co.	5,955	150	5,805
T. Mason	6,076	277	5,799
H. Gough & Son	5,930	235	5,695
Geo. Cave & Son*	5,858	266	5,592

WOODFORD.—For sewage works, for Thrapston Rural District Council. Mr. T. Lloyd, Surveyor, Thrapston:—

W. G. Wilmott	£499 0 0	A. Traynar	£347 0
J. Holroe & Sons	461 10 0	W. W. Bolton, Thrapston*	324 10
O. P. Drever	450 0 0		
J. Lawrence	364 15 10		

YNYSHIR.—For erecting 30 houses for the Pleasant View Building Club. Mr. E. Rees, C.E., architect, Pontypridd:—

C. Jenkins & Son	£7,800	D. Richards	£6,750
Evans Bros.	7,420	A. Richards, Pentre*	6,675
S. Rees & Co.	7,290	W. J. Brooks	6,300
Jones Bros.	6,900		

YNYSHIR.—For erecting 30 houses, for the Bryn Awel Building Club. Mr. E. Rees, C.E., architect, Pontypridd:—

C. Jenkins & Son	£7,860	Jones Bros.	£6,900
Evans Bros.	7,420	D. Richards	6,750
S. Rees & Co.	7,290	A. Richards, Pentre*	6,675

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VIEW FROM BISMARCK-STRASSE.

GROUND PLAN.

THE SCHILLER THEATRE, CHARLOTTENBURG.—MM.

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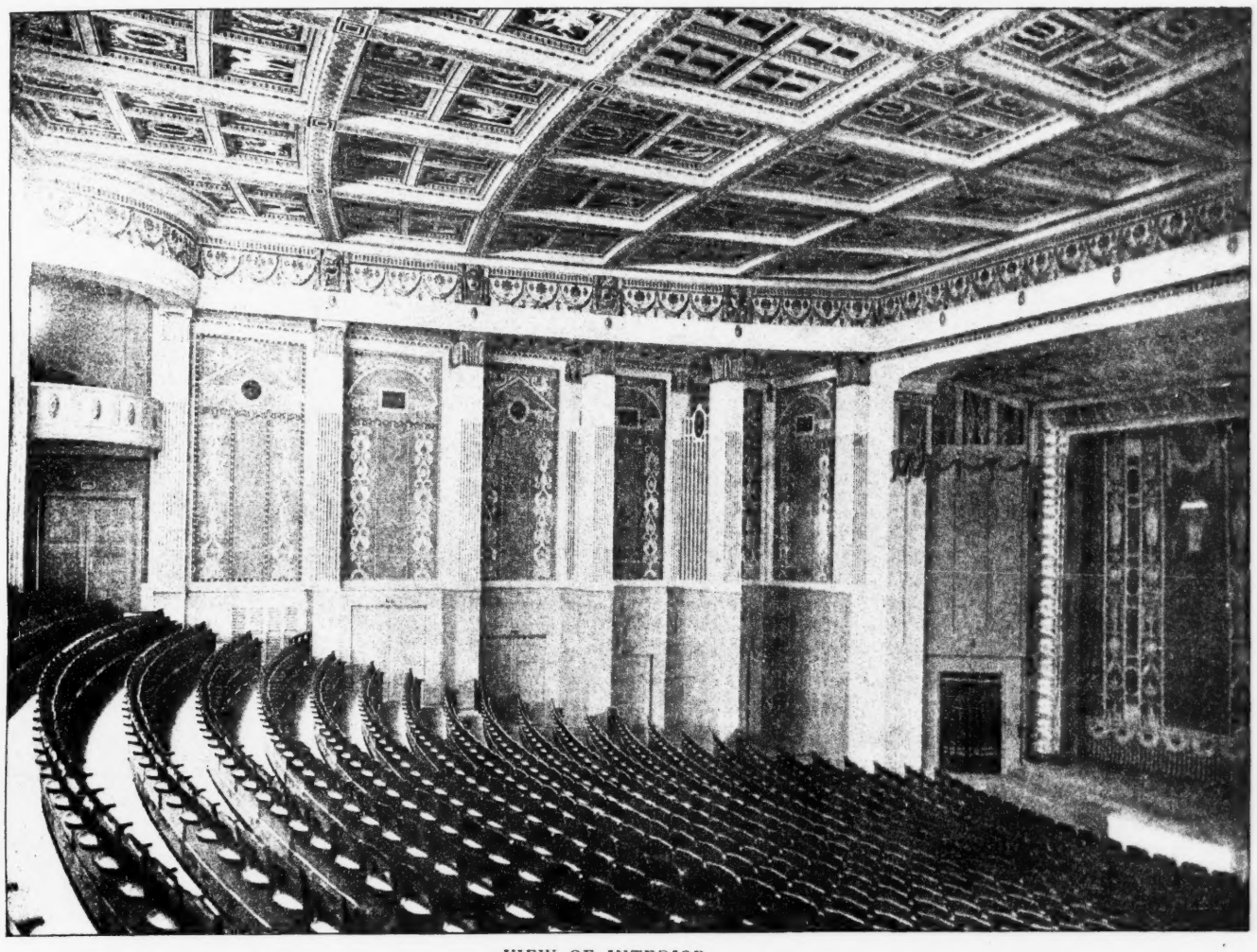

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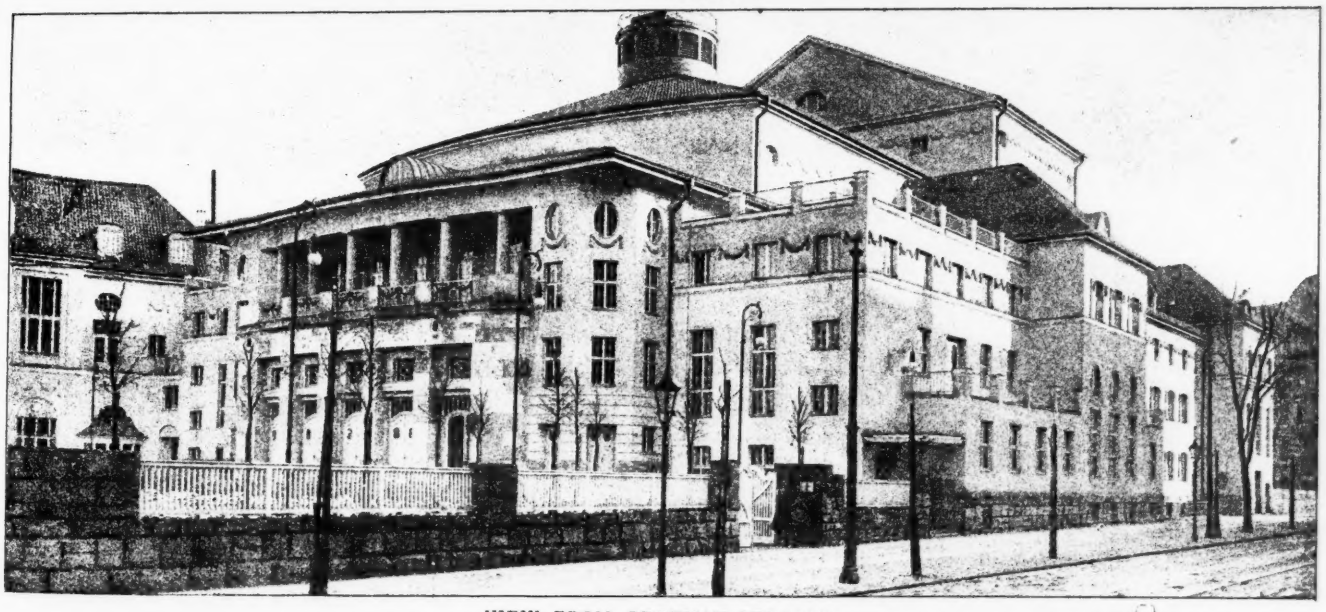
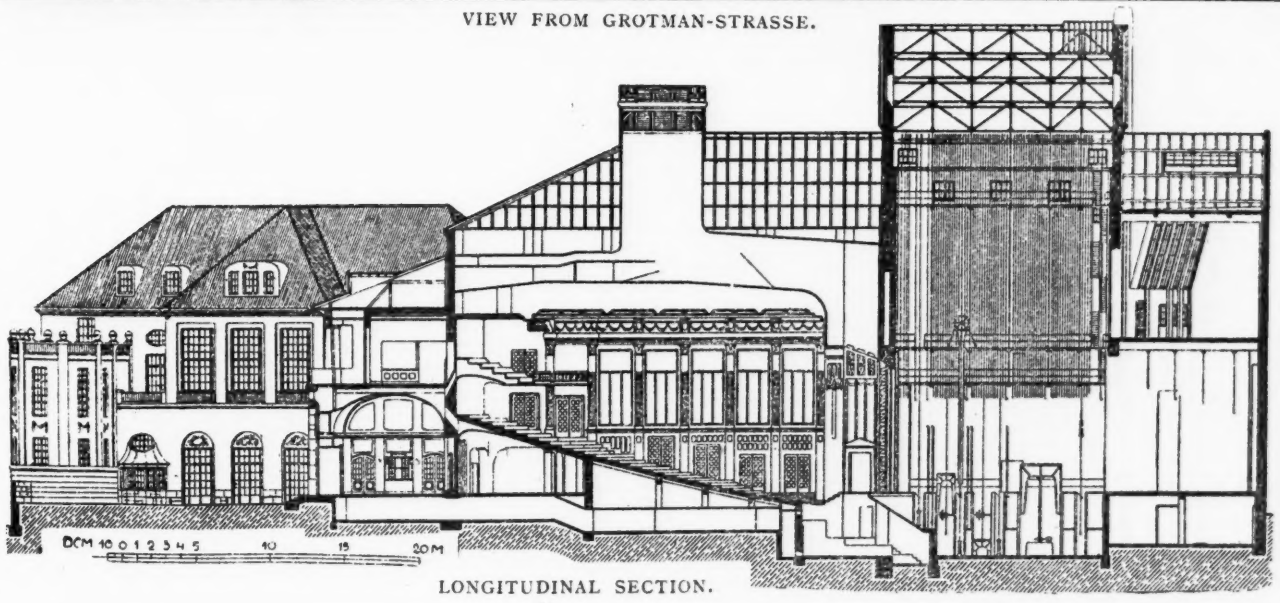


VIEW FROM GROTMAN-STRASSE.



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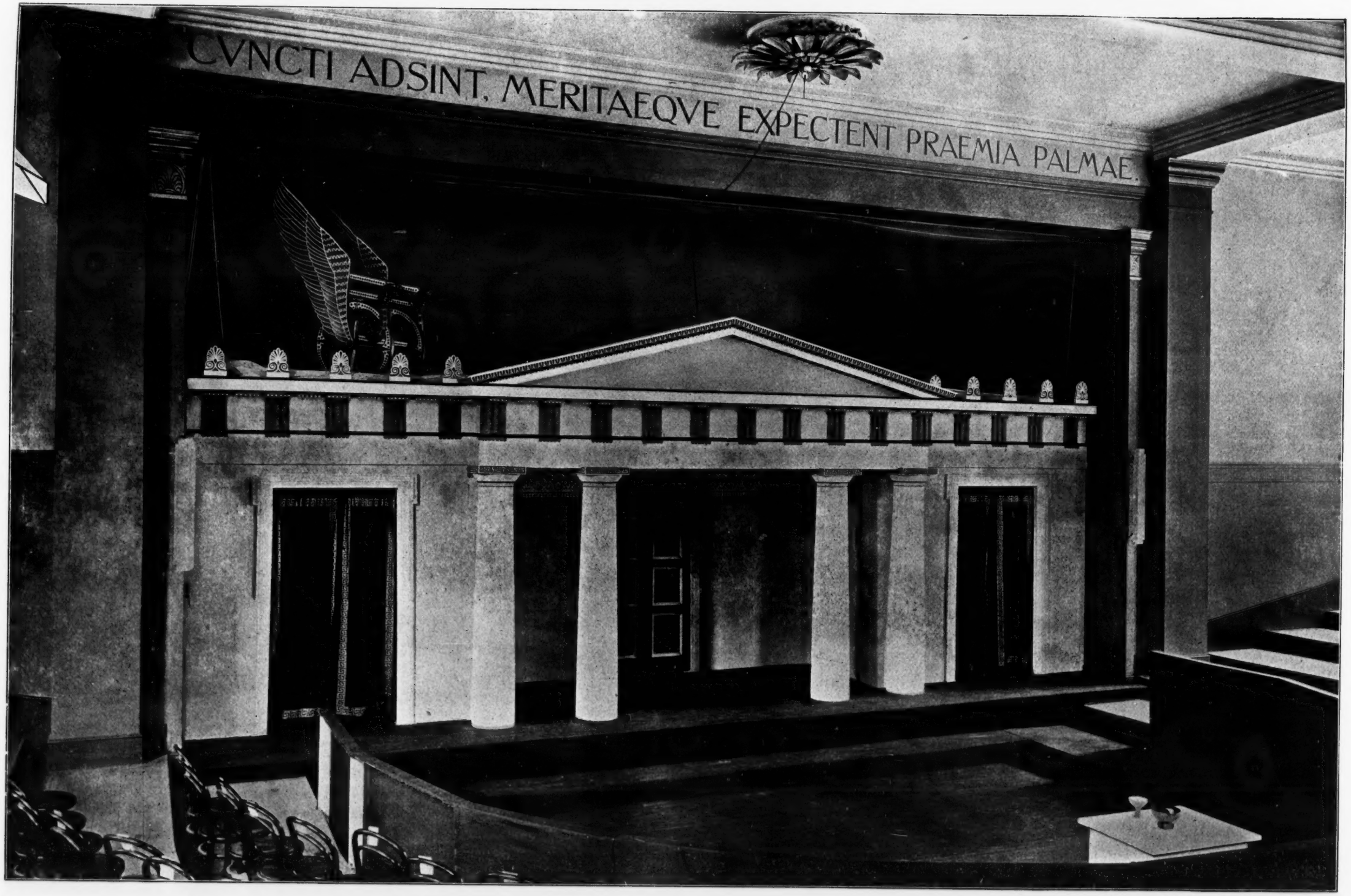

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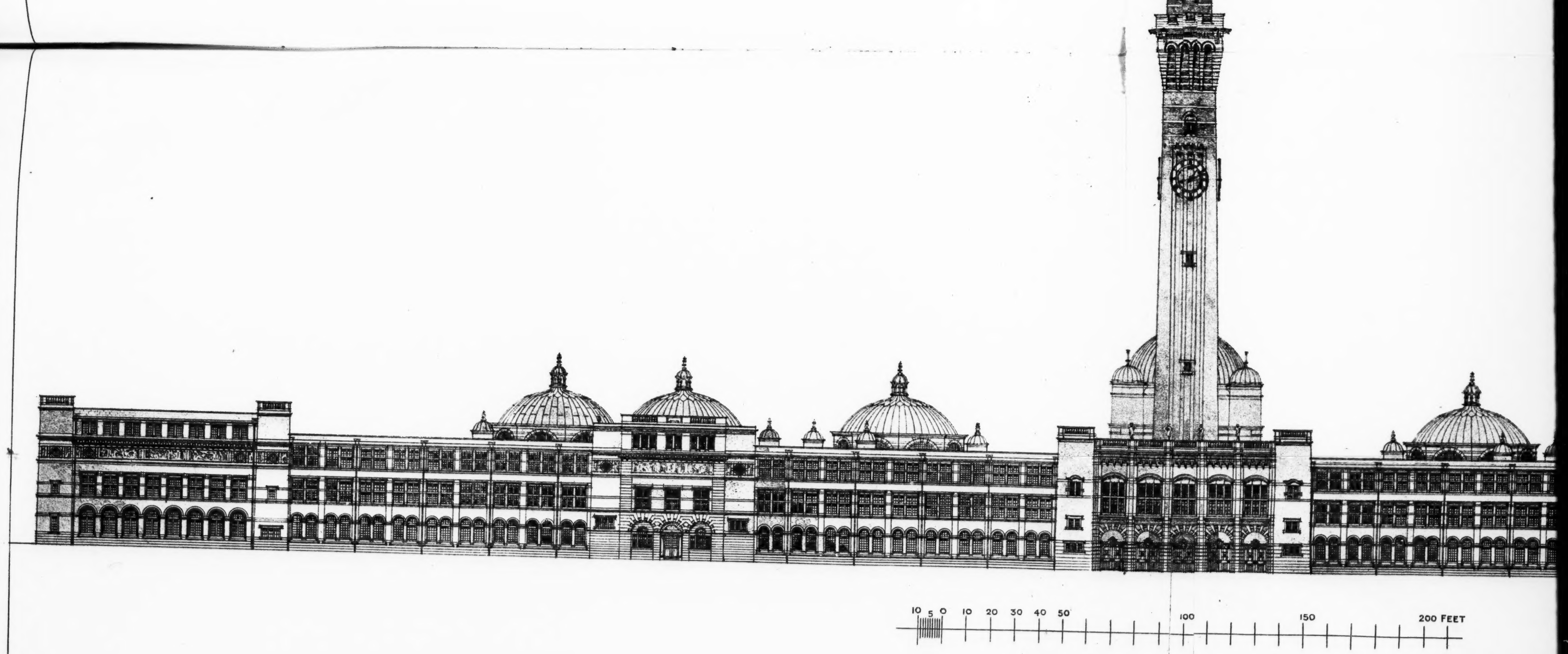

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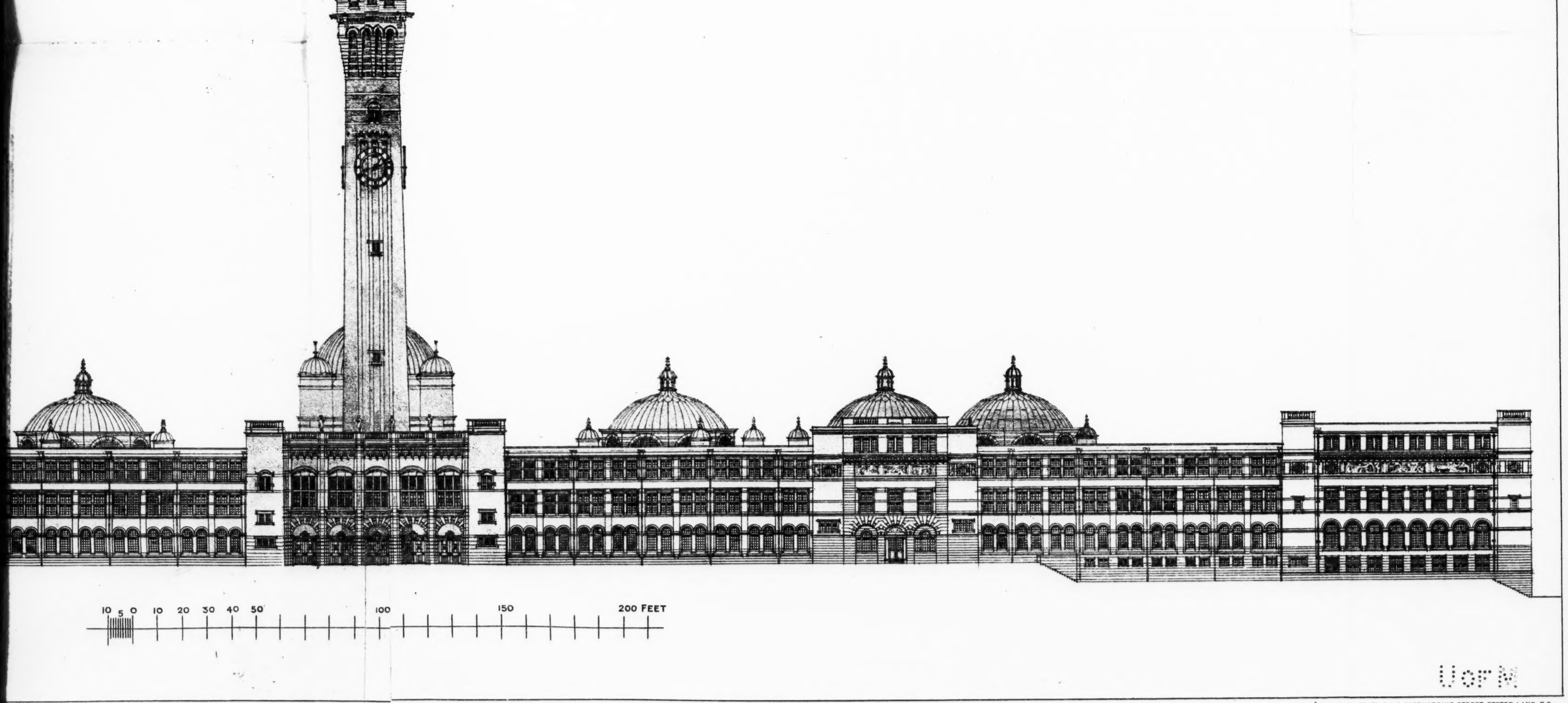

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